BOOK OF WRINKLES

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Saranac

Mich.

Feb. 14-1913.

The Book of Wrinkles

A COLLECTION OF HANDY, LABOR-SAVING DEVICES AND IDEAS FOR THE USE OF MILLERS AND MILLWRIGHTS

COMPILED FROM THE "AMERICAN MILLER"

BY

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FOREWORD

This "Book of Wrinkles" is published in response to frequent requests from millers to embody in permanent form some of the useful hints and expedients that have appeared in the "American Miller" during the past score of years. Since several thousand such "Wrinkles"—as they are familiarly known to millers—have been published, it may be surmised that it was not easy to make a choice from such an embarrassment of riches. It was necessary to place a limit on the number to be printed; and therefore it was deemed wise to give preference to those which were simple, easily comprehended through means of a rough illustration, and such as were considered most practical to the miller.

In consequence, many of the best things published in the "American Miller" are omitted as they were, in some cases, too complicated for ready comprehension, or demanded machine shop equipment and tools not available in all cases. So, too, where an idea has risen to the dignity of a machine, it has been thought best to exclude it from this collection, as machine construction is a talent that few possess. An exception has been made in only one or two cases.

The original purpose was to give credit for each individual idea reproduced here; but this was found not to be feasible. Some were contributed anonymously, years ago, and the actual authorship cannot be ascertained; some are old and common, and the credit for the origin of many is disputed. It seemed hopeless to adjust the equities in all cases; and for the sake of uniformity it was thought wiser to publish them all without identification marks, especially as all were credited when originally printed. It will suffice to say that the publishers make no claim for themselves, aside from assembling the various ideas. The book is the product of the ingenius minds of the readers of the "American Miller," its associate editors, so to speak, and to them the credit is due.

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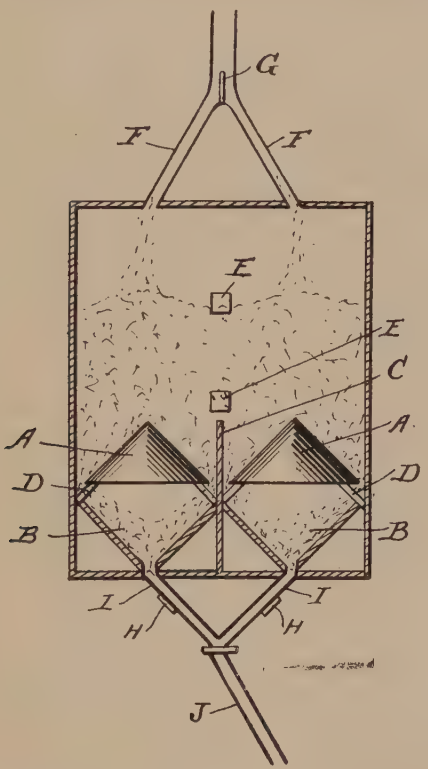
CHAPTER I

BINS, HOPPERS AND SINKS

WHEAT TEMPERING BIN

The accompanying drawing represents a wheat-tempering bin, which can be made to suit requirements, either small or large, depending upon how long the miller wishes to let the wheat lie after wetting. The originator of the plan allowed the wheat to lie three hours.



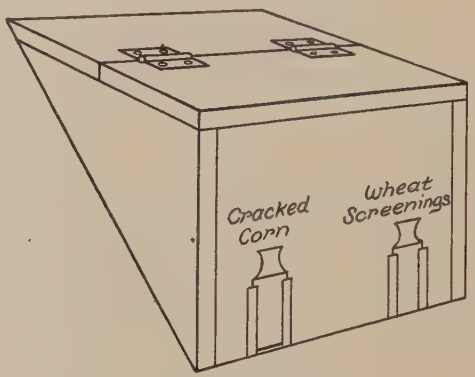
A common wheat bin can be used, say 6x6x12 for a 200-barrel mill. *A* is an inverted hopper, so placed over hopper *B* as to allow the wheat to pass around its outside edges into hopper *B*. *D D* are supports for hopper *A* to rest upon. *C* is a partition extending to the top of hopper *A* between the inverted hoppers. *E E* are glasses

through which the wheat can be seen. *F F* are the feeds to the bin, divided into two streams for the inverted hoppers. *G* is a valve to spout the stream to either feed. *I I* are the discharge spouts from the two hoppers. *H H* are glasses for ascertaining if the wheat is being drawn from each side alike. *J* is the spout leading to the cleaners or elevator.

This method permits of the same stream of wheat moving all day. There is nothing to change and the apparatus attends to itself. The wheat will be continually drawn from the bottom instead of the middle of the bin, and the wheat will be used first which is put in the bin first.

BIN FOR RETAIL STOCK

The bin shown herewith is self-explanatory. Built against any slanting place in the mill, with slides in the front as indicated, it will be found very useful, and any granular stocks such as hominy, grits,



pearl meal, etc., can be stored in it. Such a bin is particularly adapted for any stock which is sold in small quantities, such as poultry feed.

CAGE OR BASKET SCREEN

The accompanying sketch or drawing shows the method of making and hanging a screen in the form of a cage or basket in an opening in the floor above dumps or bins into which grain is poured. The basket screen presents five times the surface of the ordinary floor screen, can be lifted out and turned over and trash emptied or shaken out.

Fig. 1 shows the cage in place; Fig. 2 shows a view of the cage

and basket and how to construct it, but differs from that in Fig. 1 in that there is no frame at the bottom, the wires being fastened at or in top frame, passing down, bent so as to form the bottom, and then passing up and fastened in top frame on other side. This shows only

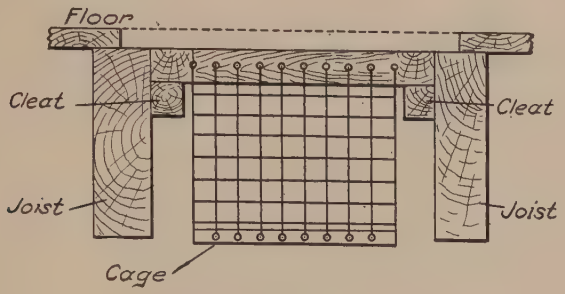


Fig. 1

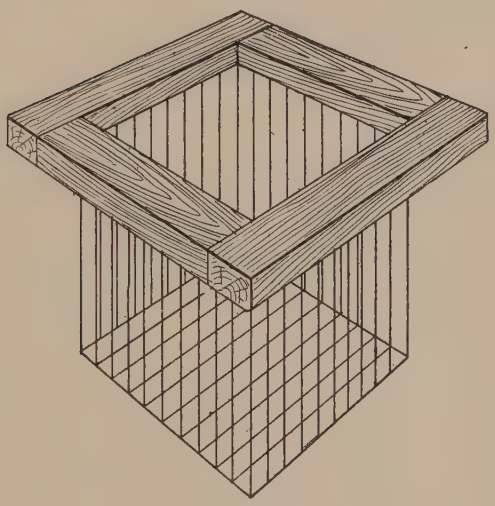


Fig. 2

single wires, that is, running one way or vertically. The basket in Fig. 1 shows wires crossed or meshed, which is better.

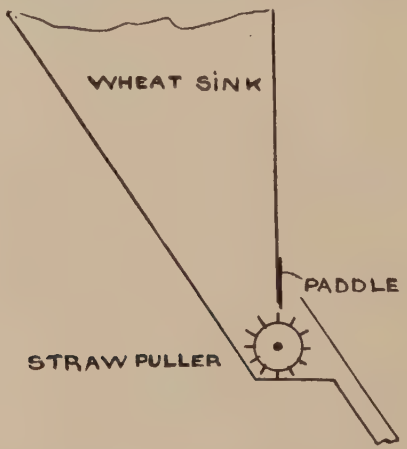
The wires can be placed close or wide apart according to the grain it is intended to screen; a half or three-quarter-inch mesh for grain such as wheat and rye, and one to one and a quarter-inch for corn. That will prevent corn cobs, husks, etc., from passing through and

worrying the life out of the operator by shutting off the flow from bin by closing the opening gauged by the slide.

The drawings are self-explanatory. The top frame of the cage is supported by cleats nailed or screwed to joists, and less in width (say half-inch) than the frame pieces, so as to permit the cage to be lifted out. The top of the frame can be level with the top of the joist as shown, so that a lid may cover hole if necessary. There should be about two inches space between the sides of the cage and the joists on each side.

WHEAT SINK ATTACHMENT

The cut shows a little roll which is placed at the bottom of the wheat sink. It is provided with nails and a little belt attached. It



revolves just outside of gate and pulls out all straws, cobs, etc., that may be in the wheat, and makes an even flow.

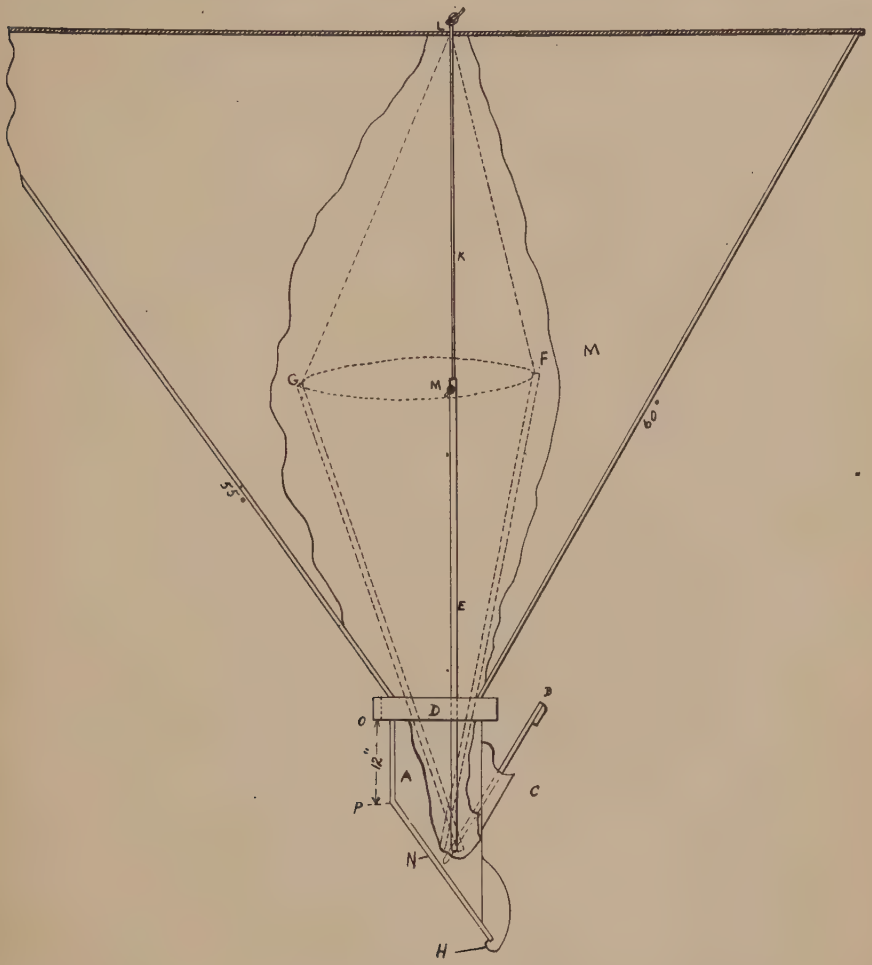
FEED OR BRAN HOPPER

The sketch shows an improved form of feed or bran hopper which may be found handier than some in ordinary use.,

The hopper, *M*, is of the ordinary type. The sides should not be flatter than 50 degrees. The opening at yoke *D* is 12 inches square, inside measurement. The sacking spout *A* is also 12 inches, inside measurement, and 12 inches from *O* to *P*. The bottom board,

N should not be flatter than 50 degrees; when *B* is raised up until the bottom end is even with the lower end of face board of spout, the opening is 12 inches.

A half-inch hole is bored in the choke-up pole *E* and cord *K* is

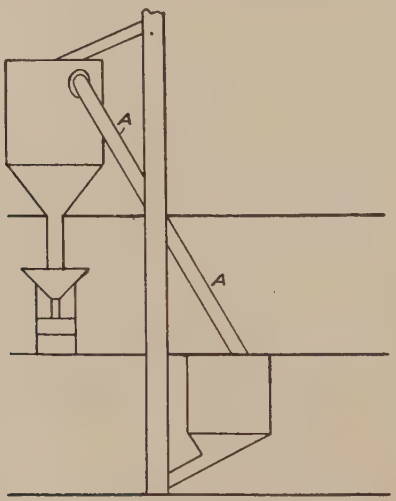


passed through the hole and knotted. The other end of cord is run up through the top of bin and should be tied where it can be got at to shorten when cord stretches so as to let the pole down too low. A common fork handle makes the best pole.

When the bran or feed chokes in the hopper, slide *B* is pulled clear up, the hand is passed in at *C*, to get hold of the choke-up pole, which can be made to describe a circle from *G* to *F*. This will keep the bran or feed flowing without striking the sides of the hopper with the hand ax or hammer, or running upstairs and poking the bran down from above. The back of sack is held by a cleat, *H*, and the front is held in the hand.

OVERFLOW SPOUT FOR HOPPER

Sometimes conditions do not permit the building of a large grain hopper over the feed grinders, and in consequence the hopper may at times get full and choke up the elevator. In the accompanying



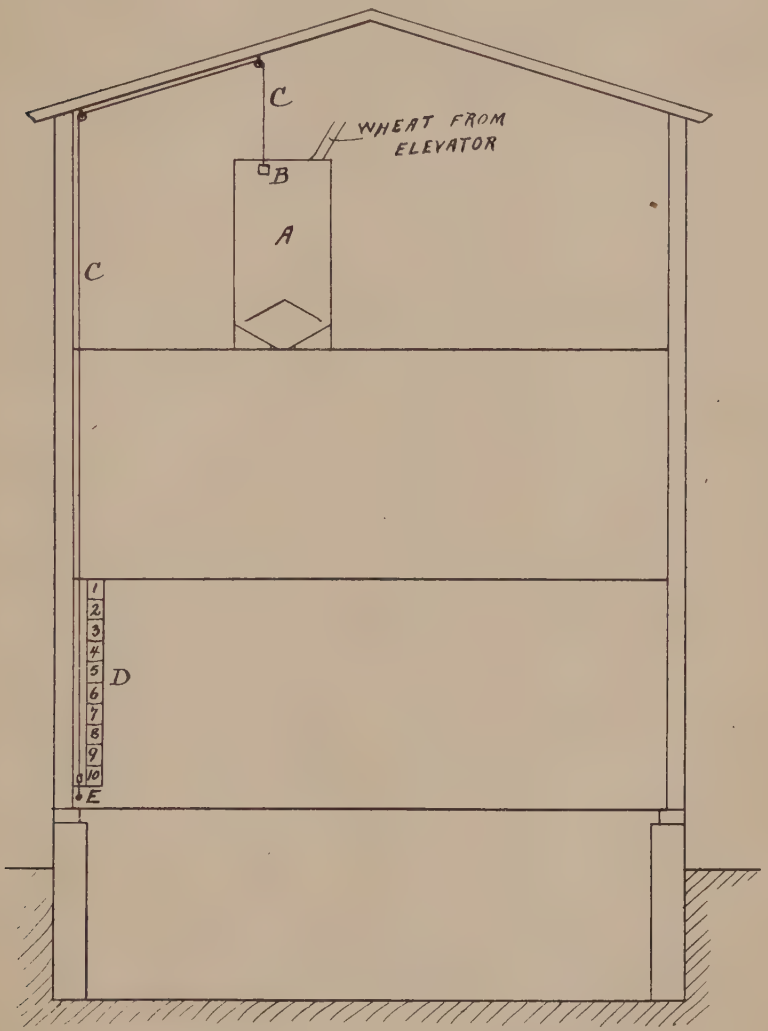
sketch *A* illustrates an overflow spout from a point near the top of the hopper above the grinder back to the first hopper where the grain is dumped in. Thus the second hopper will never get full and choke the elevator.

INDICATOR FOR WHEAT BINS

The illustration shows an indicator for wheat bins and hoppers. *A* is the stock bin. *B* is a piece of wood, 4x4x4 inches. *C* is a small

rope running over pulleys, as shown, to indicator board *D*, located on the first floor of mill.

To ascertain the amount of wheat in bin, unfasten rope from fast-

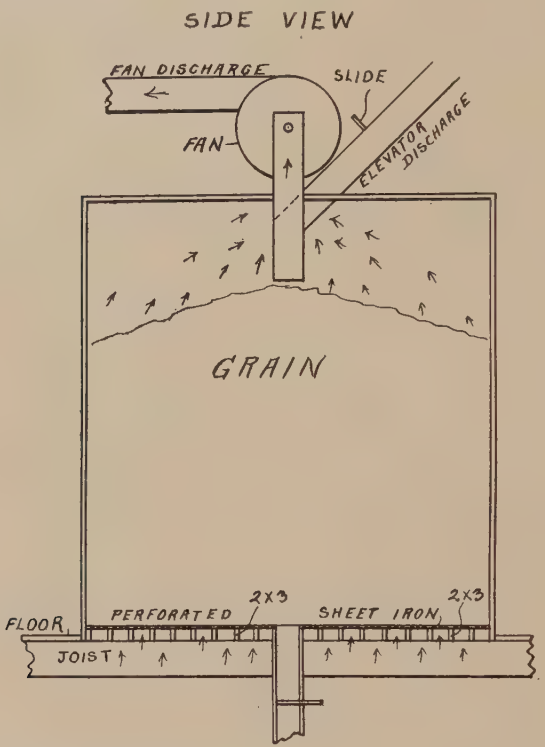


ening *E* and let block *B* down until it rests on wheat, when the position of rope on indicator will show the number of feet of wheat in bin. This wrinkle is a labor-saving device that will save many tedious trips up stairs.

BIN FOR DRYING GRAIN AND DESTROYING INSECTS

The purpose of the bin shown in the illustrations is to dry wheat, corn or other grain and destroy weevil or any other insects that might be brought to the mill by the farmer.

The grain can be left in the bin and the air drawn through until it is dry enough to store; or the bin itself can be used as a storage

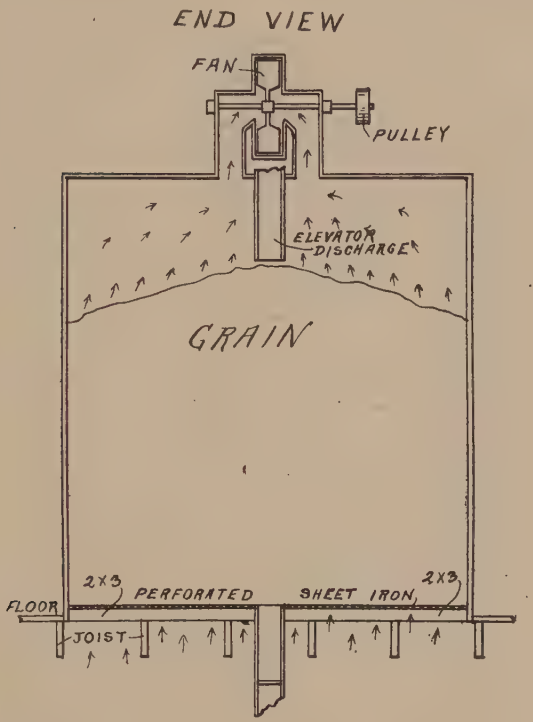


bin if there are no other bins for that purpose. The bin ought to be as tight as possible at the top, so that the fan will draw the air through from the bottom.

At the bottom, the floor is taken out and 2x3 scantlings laid on the joists. Perforated sheet iron is placed on these, so as to allow the air to be drawn up through the grain. The 2x3's must be placed close enough so that the sheet iron will not bend; say about four inches apart. The sheet iron should be laid with the rough or "gratey" side up, so that the grain will not lie so close to the bottom. This will al-

low the suction of the fan at the top of the bin to draw the air and fumigating gas fumes through the grain.

It is only necessary to run the fan two or three hours every day;

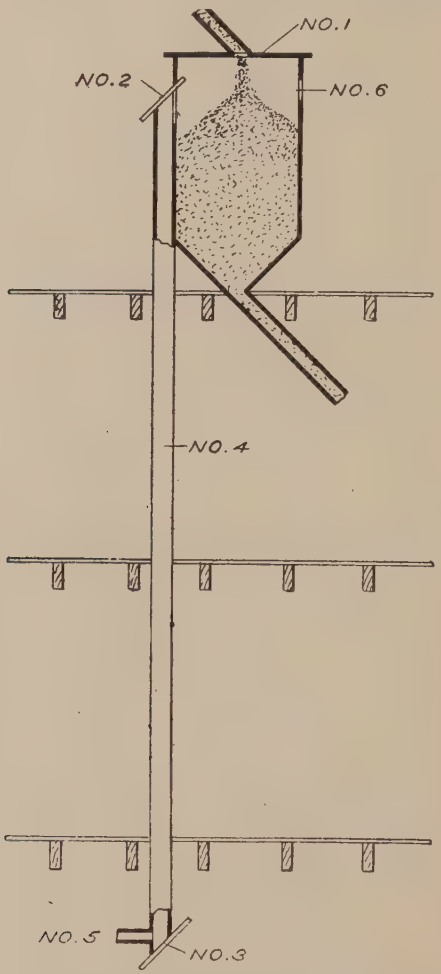


and a bin with a capacity of 500 bushels will need only an 18-inch fan. That will not use as much power as it would take to run the grain over every day for a month.

LOOKING-GLASSES FOR BINS

In the illustration No. 1 is the stock hopper, No. 2 and No. 3 are looking-glasses, No. 4 is the tube extending to lower floor, No. 5 is the observation opening, No. 6 is an opening for natural or artificial light. The glasses should be set at an angle of 45 degrees; the tube should be made light-proof by tight joints and by being painted black on the inside.

By looking in at the opening at the bottom of the tube the interior of the bin can be seen as plainly as though you were looking in



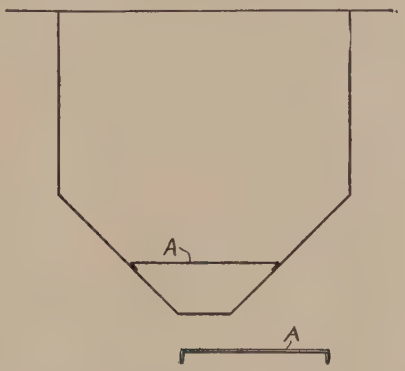
at the top of it, and it makes no difference whether the bin is one floor or ten floors above.

SCREEN FOR WHEAT HOPPER

The accompanying sketch represents a wheat hopper for receiving grain from farmers' wagons, and *A* represents a screen to catch

straw plugs, sticks and such stuff, which is likely to become very troublesome if it gets into elevators or wheat separator spouts.

The outlets at the bottom of wheat hoppers are generally too small to permit screens, as they would not let the wheat down fast enough. Hence it is practical to put the screen further up, as in the



sketch. A good screen can be made out of ¼ or ⅜-inch irons, fifteen to eighteen inches long, the ends turned down and pointed to fasten them. The irons can be put in both ways across the hopper, spaced an inch to an inch and a quarter apart.

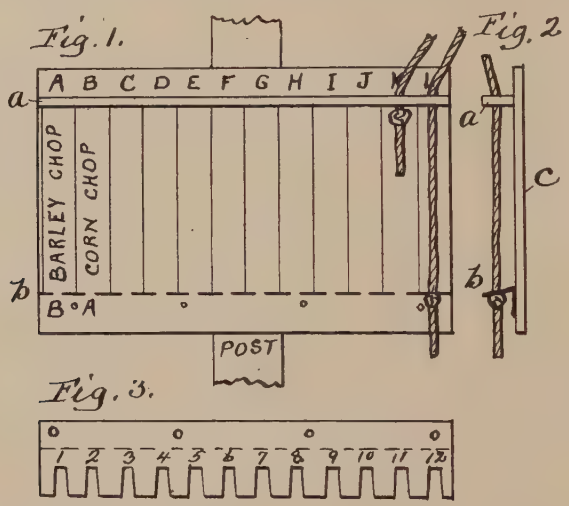
CHAPTER II

SPOUTS AND SPOUTING

SWITCHBOARD FOR THE MILL

The sketch herewith shows a little apparatus which might be called a switchboard by which ropes may be attached to valves in spouts and slides in conveyors to change the flow of different stocks without running all over the mill to do so, and which, when once changed, holds the valve or slide securely in the desired position.

First take a 12-inch planed board and cut long enough to leave



about a 2-inch space for each rope to be used. This forms the back (Fig. 2—c). Now take a strip of same material, 3 inches wide, and the same length as *c*, and secure it about two inches from the top of *c*, first boring a ⅜-inch hole at each space *A, B, C,* etc. Next take a very heavy piece of galvanized sheet iron and cut a piece of the same shape as Fig. 3, cutting the notches 1, 2, 3, etc., which hold the knots on ends of the ropes, to correspond with the holes in *a*, and secure it to the back at *b*.

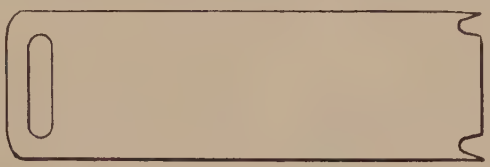
The board may now be fastened up in a convenient place. In a feed mill this would preferably be near the grinding apparatus so that

the flow may be changed quickly while running in a different class of work.

Turning to Fig. 1, a piece of paper is now fastened behind the ropes to *c*, between *a* and *b*. On this a space is marked for each rope hole, and in the space is marked the stock in the bin into which the rope on this space would throw the stock. Each space is then lettered at the top, *A*, *B*, *C*, etc. As two ropes are necessarily fastened to each valve, it must be known which one to release. Therefore, if you wish to pull the rope *A*, leading to barley bin, release rope *B* as indicated by the letter at the bottom of space *A*, and vice versa.

A PLOW-EDGED SLIDE

The illustration shows a method of cutting the slide in the sack spout. The purpose of the knife edges on the bottom of the spout



slide is to plow out the grooves which often become so filled with bran, etc., that it is almost impossible to close the slide. When the slide is closed the edges plow out the grooves which prevents it from sticking.

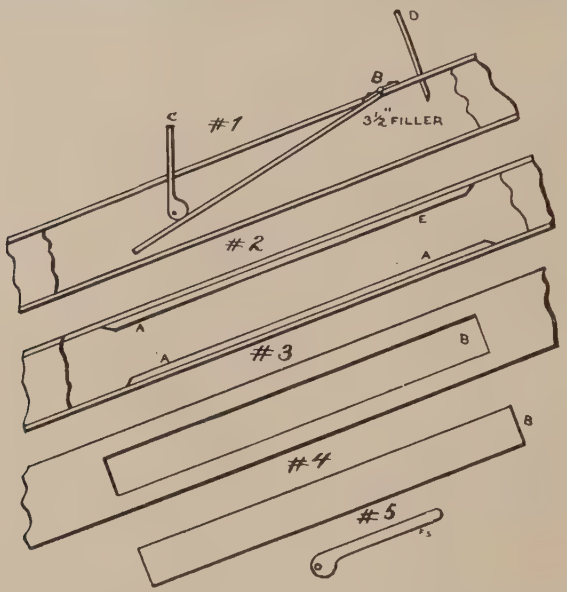
VALVE FOR WHEAT SPOUT

The accompanying sketch illustrates a valve or gate for a wheat spout that will not choke or clog with straw or other small trash in the wheat, as the ordinary square board or sheet-iron gate will do. It is to be placed in the spout that carries the wheat from the storage bins to the milling separator.

Fig. 1 is a side view of spout, with filler cut away showing tongue and eccentric for raising or lowering tongue to regulate the amount of feed to the separator. Fig. 2 is the top of the spout with the cap off, showing two extra seven-eighths-inch fillers, one on each side of the inside of spout. The spout is 6½ inches wide and with the extra seven-eighths-inch fillers leaves three inches in the clear, from *A* to *A*. for the tongue, Fig. 4. Fig. 3 is the cap for the 3x16-inch opening in

the spout. Fig. 4 is the tongue, which is fastened to the cap with a small hinge at *B*. This tongue is 2 15/16x15 inches. Fig. 5 is the eccentric *C* (Fig. 1) to be placed on the inside of the spout, on the filler, with small bolt about three inches from end of tongue. The eccentric should be about six inches long, with a 1½-inch head.

The principle of the device is for the tongue and bottom of the spout to form a funnel and allow the trash and straw to pass out with



the wheat. There are no square corners for the foreign matter to lodge in, as there are with the square wood or sheet-iron gates.

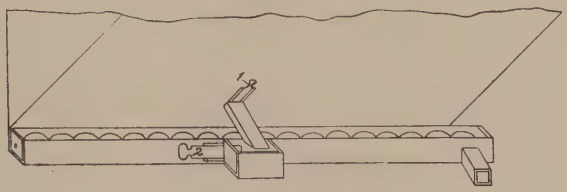
To shut off the wheat, close down the wood gate, *D*, Fig. 1, without moving the eccentric. When it is again desired to put on the feed, pull up the wood gate, when you have the same feed as before.

The above dimensions are for running a stream of from 60 to 90 bushels of wheat per hour. If a larger amount is wanted leave out the extra filler, *A-E*, Fig 2, and make the tongue the full width of spout.

SPOUTING WHEAT TO CONVEYOR

The accompanying sketch shows a device which has been tried and found a great help where the wheat is trashy. A plain box is made and fastened onto the side of any conveyor. Make a fair-sized

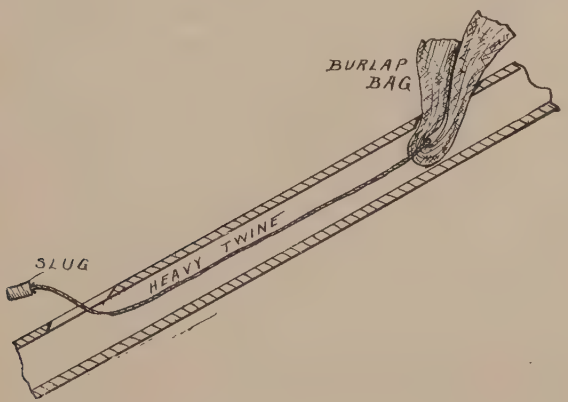
hole in the conveyor box with slide, as shown at 2, over it. Then tap the bin with spout and put in slide 1. Leave top of box open and have it large enough to get anything out that could get down the spout. When all is ready, open slide 1 clear out. Then open slide 2 until the



conveyor takes its load. If the conveyor stops, the wheat never runs in, as it will only run in as the conveyor takes it away. This leaves large openings so that cobs, small wads of hay and such trash will run through. It is best to leave slide 2 open and shut off the wheat with slide 1.

SPOUT WIPER

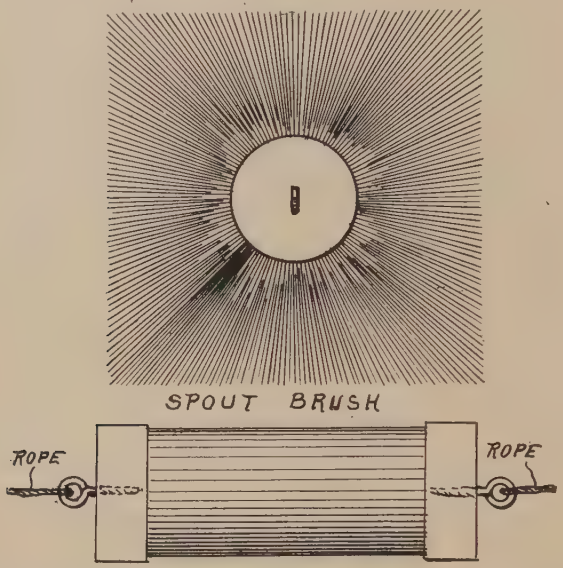
An ingenious spout wiper is reproduced herewith. A piece of heavy twine of the proper length is provided with a slug on one end, a tap or any piece of heavy metal that can be easily attached to a



string. A sack on the other end of the twine completes the device and makes a convenient apparatus for cleaning a tin-lined spout. Two persons can use it while the flour is running.

BRUSH FOR RIDDING SPOUT OF MOTHS

The best spouts are bound to fill up once in a while with moths and other obstructions, and clearing them out is no easy task. The accompanying sketch, which it is almost superfluous to explain, illustrates a spout brush which will clean any sort of spout. The brush



itself should be made at a brush factory to fit the spouts, and will cost but little. Then by attaching a rope to each end, dropping it in the spout, and pulling back and forth, it is an easy matter to clean out the spout.

SAFETY SLIDE

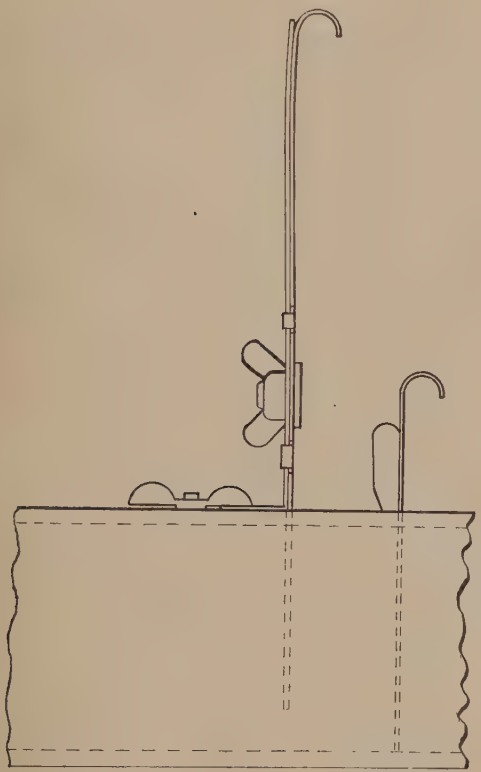
The accompanying drawings show in detail the construction of a spout slide that is at once simple, complete and very useful where wheat is drawn from several bins at a time.

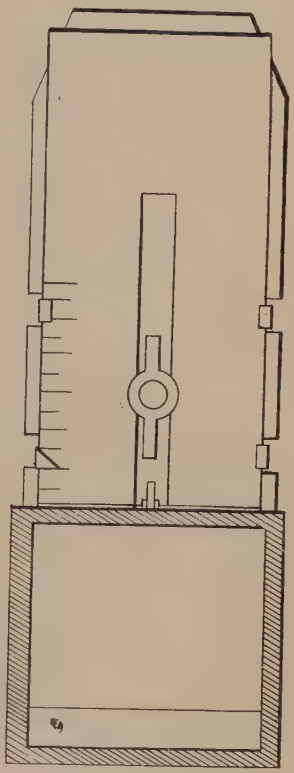
By the use of this slide it is possible to get a perfect mixture, as one can see by scale on slide the exact amount he is drawing out of each bin. It is also a safety device, as when the thumb-screw is set it is impossible for the slide to work out of place.

It is made in two parts, as shown, of heavy sheet metal, and two

flanges are cut in each side of the slide which are to be fastened over the brace to allow the slide to move up and down.

When this slide is in use see that the small copper button is turned over flange so as to prevent it from coming out. If the spouts are in a dark place put in the old-style slide, turn copper button and remove slide, taking it to the light and setting it to suit. For instance,





if you want it open one inch, loosen thumb-screw and pull slide up until pointed indicator next to flange is at the one-inch mark, tighten thumb-screw, return to spout and turn button over flange, pull out old-style slide and you are sure of being right.

If you are drawing out of a spout 4 inches square and feeding an elevator which requires the spout to be open 2 inches, you simply raise slide until indicator shows 2 inches. If you wish to draw out

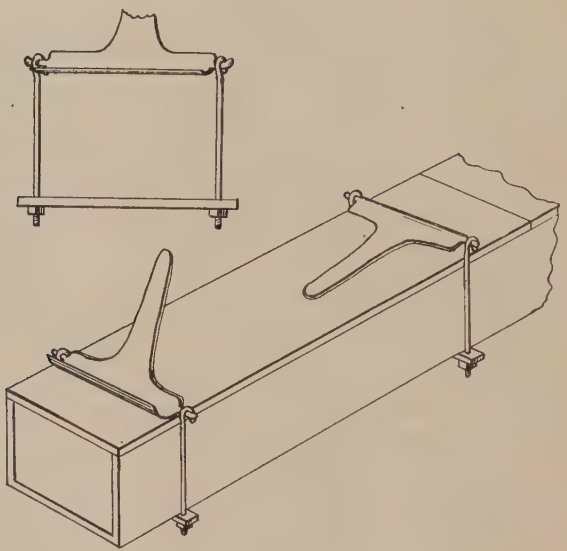
of four spouts at one time, raise each slide ½ inch and you know your elevator cups are just full without looking.

Corn is apt to move the old-style slides, as it beats hard against them. This one is safe. This slide does not require blocks inside of spout to prevent tipping, as when thumb-screw is set and button is set on flange it acts as a brace and when grain is against the slide it cannot tip. The slide can be made to fit any size or shape of spout. Any tinner can cut out the pieces in a short time.

If the spouts in the mill are the same size the slides can be used interchangeably.

CLAMP FOR SPOUTS

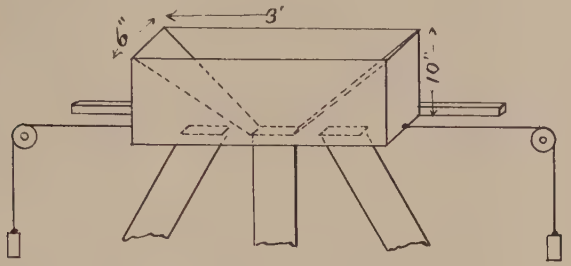
The sketch herewith given needs no explanation. It shows a clamp to hold the tops of spouts in position and one which will also



permit the quick removal of the tops for cleaning the spout or for other purposes. The sketch shows the form of the clamp and also its application to the spout. The clamps can be made of wood or very heavy sheet metal. Felt might be used with metal clamps to allow a small amount of "give."

SUBSTITUTE FOR SWITCH

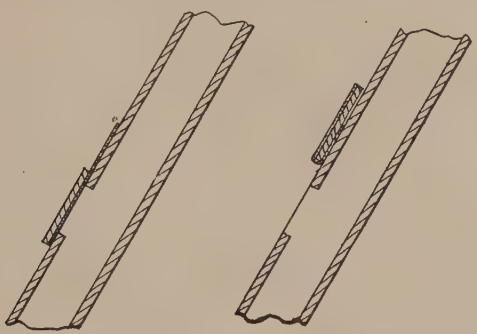
In preference to switches in spouts a convenient device can be made for gathering grain from an elevator head or machine and running it into any one of two or more bins.



Make a box, say 6 inches wide, 10 inches deep and 3 feet long, hoppered to the center. Make a place for it to slide on, between cleats, over the spout holes. Manipulate it with ropes from below, running over grooved pulleys. It requires but little space in height and makes a clean cut-off.

COVER FOR HAND-HOLE IN SPOUT

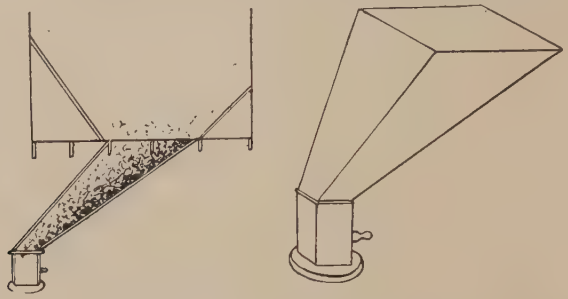
The annexed illustration shows a convenient dustproof cover for hand-holes in spouts. Make the lid large enough to cover opening well. On the bottom side cover with fleece-lined cotton, fleece side out.



Let the cloth be about four inches longer at one end than the cover and tack it to the spout so that the lid will fold back as shown in the sketch.

BRAN SPOUT

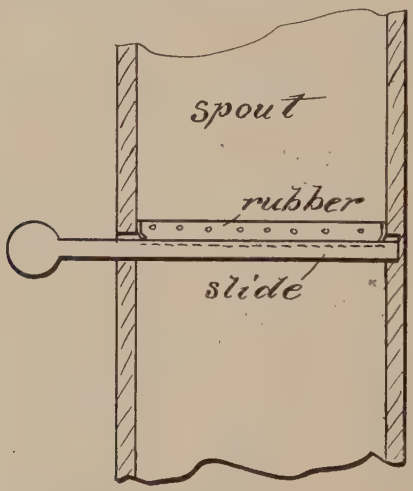
Here is a sketch of a bran spout that will not choke. Owing to the fact that both mitres and pitch run the same way, the bran will



bear mostly on the under side of the spout, coming only loosely against the upper side of the incline. As a consequence it will flow freely without clogging.

PACKING FOR SPOUT SLIDES

Millers are frequently troubled with dust blowing out of spouts around the slides and valves, and especially when the material drops one or two stories and strikes the slide.



This can be prevented by taking a strip of light rubber packing about 1¼ inches wide and as long as the width of the inside spout above the slide. Pliable rubber packing such as is used about steam engines, 1/32 to 1/16 of an inch thick, without cotton on the inside,

is best. Tack this across the inside of the spout with small tacks, say about 4-ounce tacks. Let the lower edge of the rubber project down over the slide opening about ⅛ of an inch, so that when the slide is put in place it will form a dust-proof joint.

HOME-MADE CLAMP FOR HAND-HOLE

The sketch shows a design of a home-made clamp to close hand-holes in tin spouts air-tight. The sketch requires little or no explan-

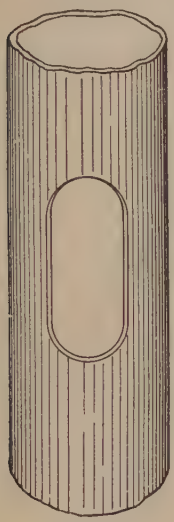


FIG. 1

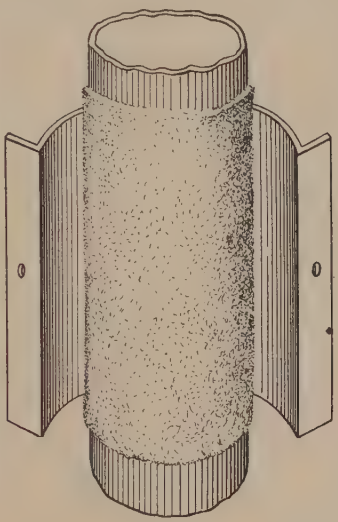


FIG. 2

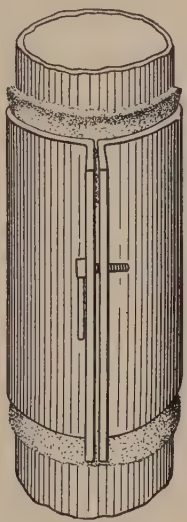


FIG. 3

ation. Fig. 1 shows the opening in spout; Fig. 2, the clamp open and showing the sweat-pad; Fig. 3 shows the clamp in position. The clamp is made of light bright tin riveted on two light iron strips, with one threaded hole to take an eight-inch bolt.

CHAPTER III

CHOKES

FEEDING IN CHOKES

Large mills often have mixers to mix in their chokeups, but the smaller mills usually have to depend on ingenuity to relieve a choke. The little device shown herewith is one that has been found very successful in relieving chokes.

The device slips in where the slide goes in the elevator boot, and one such will generally answer for the whole mill, as the elevators are usually all of a size. Keep one of these feeders hanging up in a

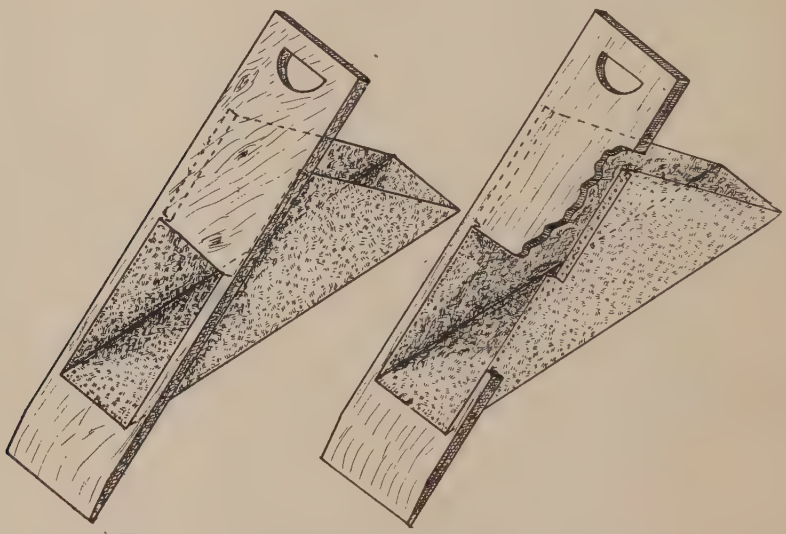


Fig 1.

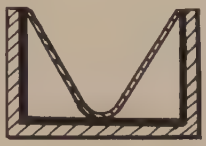
Fig 2.

handy place in the basement and when there is a choke-up simply pull out the slide in the elevator, slip in the feeder and then with a hand scoop feed in the stock as seems best.

The drawings explain themselves. Figure 1 shows the device complete, while Figure 2 shows a part of the wood cut away to indicate how the galvanized iron is cut to fit the slide.

FIXING A CHOKING MIDDLINGS SPOUT

The illustration shows a means of remedying a spout that has not enough pitch and frequently chokes up. A tin lining is placed in the

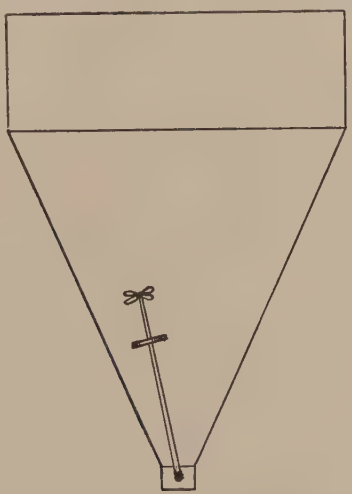


spout, not flat on the bottom, but in a V-shape, with the lower end rounded. The philosophy of this spout is that there is much less friction on the narrow channel of the tin than on the flat bottom of the spout.

CHOKE PREVENTER FOR CYCLONE DUST COLLECTOR

The accompanying sketch shows a simple way to keep a Cyclone Dust Collector from choking up.

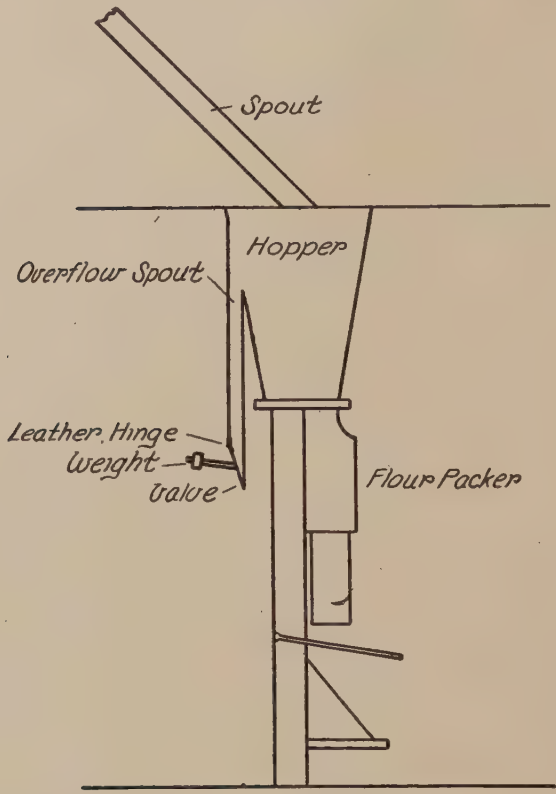
To make the device, take a piece of stiff leather, cut out a round



piece, punch a small hole in the center and slip it down on the stick about 2 inches. Next take a light piece of tin and make a wind wheel or fan of it. Place it on top of the stick, but have the fan a little smaller than the leather so it will not touch the side of the Cyclone. Secure the bottom of stick in proper position and it will go "to beat the band."

PREVENTING CHOKES

The accompanying sketch explains a simple wrinkle for preventing a packer hopper, or any bin or spout, from choking up when full.

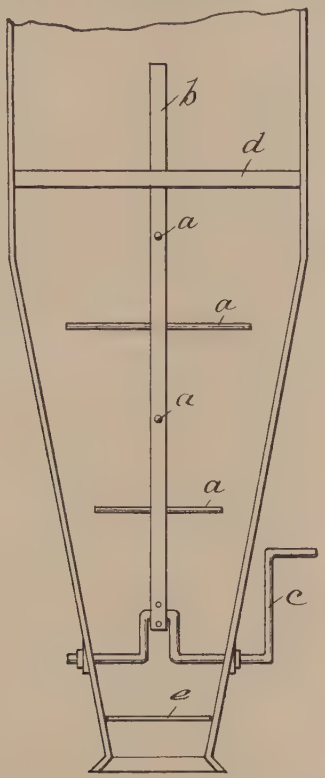


When the hopper gets full the stock will run down the overflow spout and open the valve which is ordinarily kept closed by the weight. The weight should be such that it will take but a few ounces to open the valve, though heavy enough to force it closed as soon as the pressure is relieved.

TO PREVENT FLOUR BINS CHOKING

The object of the arrangement illustrated by the accompanying drawing is to prevent flour or other bins choking. It consists of an upright hardwood strip, *b*, of suitable size, say about 1½x1½ inches, attached to crank *c*. Iron bars, *a*, are placed equal distances apart,

these distances being about equal to the stroke of the crank. A bar, *d*, at the top of the upright strip holds the latter in place. In case the crank cannot be turned continuously, it may be pulled forward and



back to start the choke. The device will prevent the flour falling all at once with a thump.

CHOKE DETECTING SPOUT

The accompanying sketch represents a piece of upright spout about six feet long, with a part of the cover two or three feet long. This cover is loose and is held in place by the bevel of the cut at the bottom and the tongue and groove on the sides of the opening and in the cover.

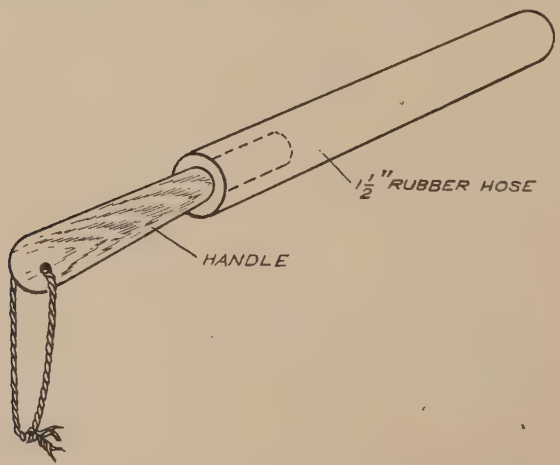
Should the spout become filled up from below this loose cover will fall off and allow the stock to run out on the mill floor, thus preventing the stock from backing up into the scalpers and sieve bolters and

causing breakdowns and delays, to say nothing of the extra work and worry for the miller. These covers can be placed between each of the

scalpers and the succeeding break rolls, as well as on all other spouts that are liable to become filled up and cause trouble.

HANDY SPOUT RAPPER

The sketch shows a spout rapper made from 1½-inch rubber hose by putting a handle in one end, with a string for hanging it up. This



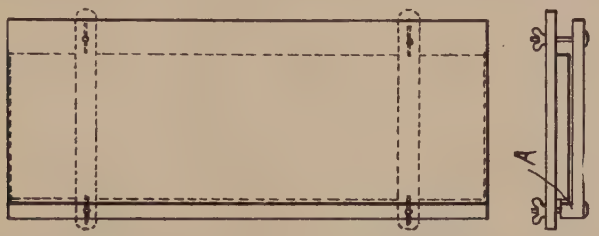
is a simple device, but will be found exceedingly useful. Put one on each floor.

CHAPTER IV

BELTS, PULLEYS AND SHAFTING

CLAMP FOR HOLDING GLUED BELTS

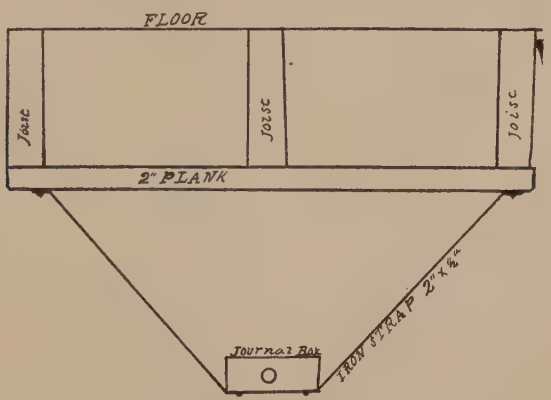
The drawing illustrates a clamp for holding a belt when gluing.



No explanation is necessary, except to say that *A* is a cleat to lay the edge of the belt against to get it straight. Use stove bolts with wing nuts.

SHAFT HANGER FOR LIGHT DUTY

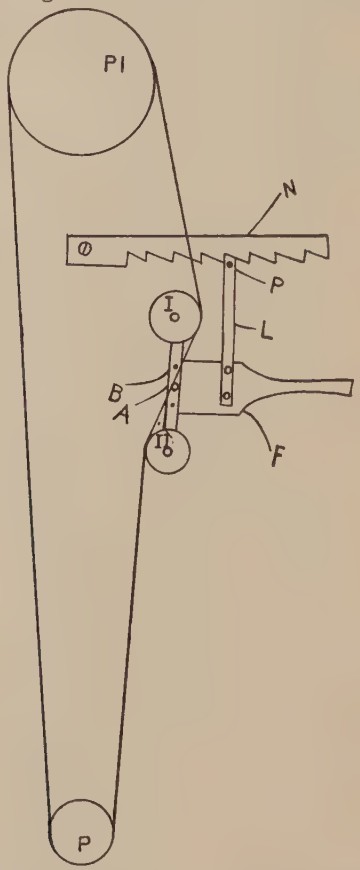
The sketch shows the application of an easily made shaft hanger for light duty. The wrought iron strap can be bent and drilled by any



good blacksmith and can be bolted to beam or ceiling, as shown by the drawing. For a short elevator shaft, or one with no great amount of strain, a strap ½ inch thick and 2 inches wide will be sufficient.

A BELT TIGHTENER KINK

Oftentimes there occur cases around mills and elevators where it is desirable, for various reasons, to so arrange one or more machines that it may be possible to stop and start them conveniently without reference to the running of the rest of the machinery.



In the accompanying figure $P1$ is the driven pulley on countershaft, and P is the pulley from which power is taken. The pulley, $P1$, is started or stopped by means of the twin idlers, *I, II,* which are mounted on a bar of iron, *B,* of suitable size; the pulleys running on stud bolts screwed into this bar. This bar, in turn, is fastened on wooden piece, *F,* which with the bar, *B,* is pivoted on a suitable bolt at *A.*

Thus it will be seen that when the handle on end of *F* is pressed

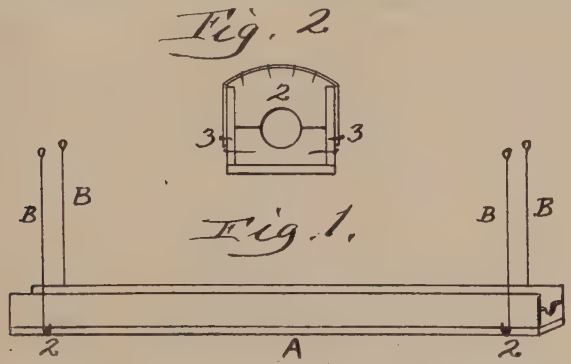
down it will tighten the belt without a very great swing of the idlers; and when the handle is lifted up, it will release the belt and allow it to hang freely from the bottom pulley, *P*.

The belt is held at proper tension by means of the locking device shown, consisting of iron bar, *L*, attached to block, *F*, and having at its upper end a pin, *P*, which engages in suitable notches in bar, *N*, and holds the idler frame wherever set, and which is conveniently released by simply raising up bar *N*.

The device is not recommended on belts above 3 inches, nor in any case where one idler can be made to serve the purpose, as it takes more power than a single idler; but on a small belt, the matter of power does not cut very much figure.

CLEANING SHAFTING

When it is desired to keep shafting bright and clean, the device shown in the sketch may be employed. It is simply a box made to fit



under the shaft, with end pieces to prevent the polishing material from escaping.

In Fig. 1, *B-B-B-B* indicate wire hangers, and 2-2 the hooks by which they are fastened to the box, so that the latter can be put up and taken down at will. It may be filled with sawdust or any other material that will absorb the grease and dirt and keep the shafting bright.

Figure 2 shows a plan which dispenses with the hangers. The end piece is cut in two and the upper half is fitted with a piece of belt which extends down over the sides of the box and holds it in place, being fastened with screws 3.

INEXPENSIVE BELT GUARDS

As examples of some of the simplest things for improving a mill, the accompanying sketches are given, and they are also examples of the use a millwright can make of odds and ends of lumber. Every

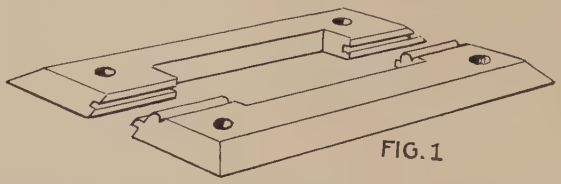


FIG. 1

scrap of matched and beaded lumber used for the bins can be used, as these belt guards require only small pieces of board.

In Fig. 1 is shown a way of making belt guards. The edges are nicely beveled and, after notching out for the belt, are placed in

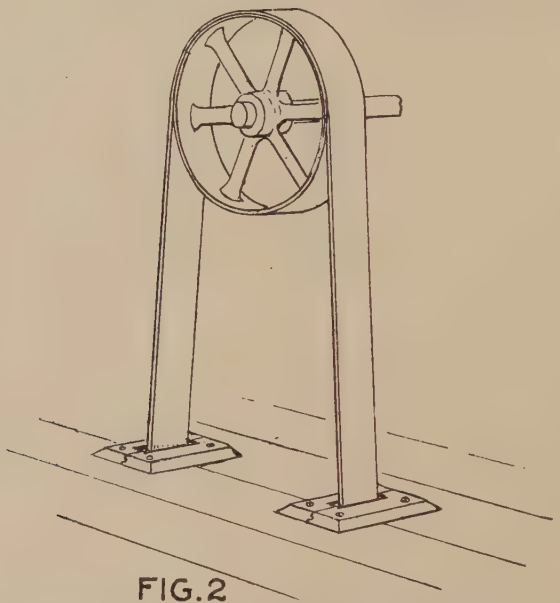


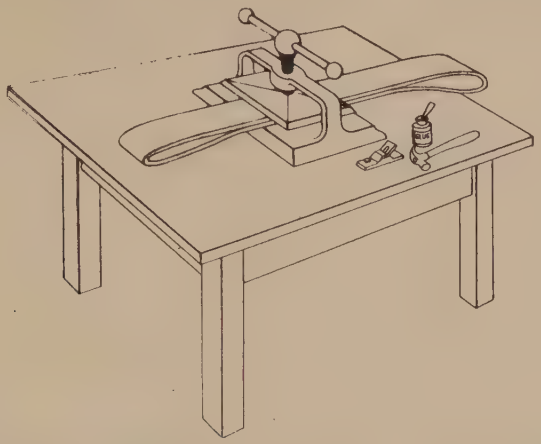
FIG. 2

position as shown in Fig. 2 and fastened down with round-headed screws.

Where large and unsightly holes have been cut through the floor this is very satisfactory, as the beaded lumber will always make a nice appearance, even if the surface to be covered is large. Where a cross or quarter twist belt passes through the floor and the guards must be set at an angle they still look well.

SUGGESTION FOR GLUING BELTS

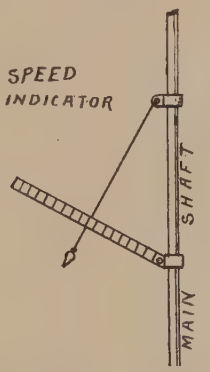
It is desirable when freshly glued belts are drying that there should be some means of giving pressure. An old copying press, such



as may be found in almost any establishment, is very handy for this purpose, as shown in sketch.

SIMPLE SPEED INDICATOR

The sketch shows a speed indicator fixed on the main upright shaft on the grinding floor. It consists of a plumb-bob hung on a wire



12 inches long and fastened to the upright shaft with a piece of hoop iron, which is bolted tight with a small elevator bolt.

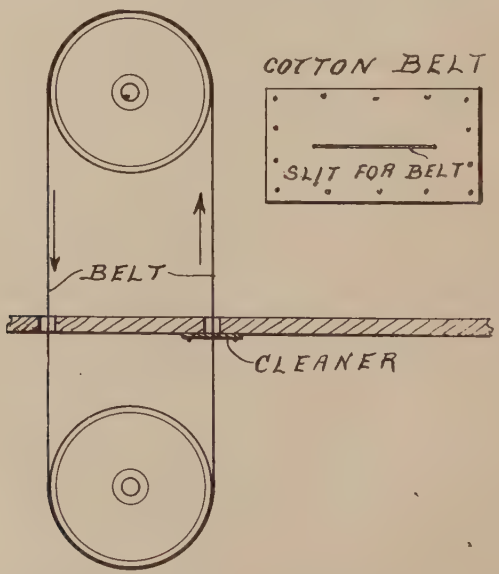
The hoop extends out far enough to allow for a hole in which to hang the wire that supports the bob. Another piece of hoop iron is bent around the shaft and extended out for about 12 inches. It is

then bent double and brought back to the shaft, the two ends being bolted together in the same manner as the upper band. A leather washer is placed on the bolt between the two strips of hoop iron and serves to keep them apart sufficiently to allow the wire to swing perfectly free between them. This iron is about 10 inches below the one that supports the plumb-bob, and, being double, it makes a slot for the bob wire to hang in.

The bob must hang a couple of inches below this arm, so that it will not strike when it swings out. This arm is marked or graduated so that the miller can tell the least change in the motion of the shaft. These marks should be of dark or light colored paint, a distinguishing color being used to show the position at which the speed of the shaft is just right. By this means a glance is sufficient to show whether the drive is too fast or slow.

KEEPING BELTS CLEAN

The accompanying sketch illustrates a simple and efficient method of keeping belts clean. A piece of cotton belting large enough to

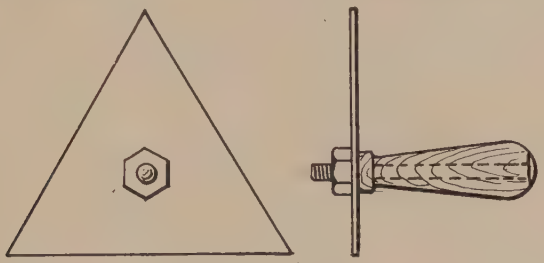


cover the belt hole in the floor is slit through the center, as shown, to allow the belt to pass through. It is then tacked under the floor

over the belt hole. In this position it will keep both sides of the belt clean and will not cause wear on the belt itself.

HOME-MADE BELT SCRAPER

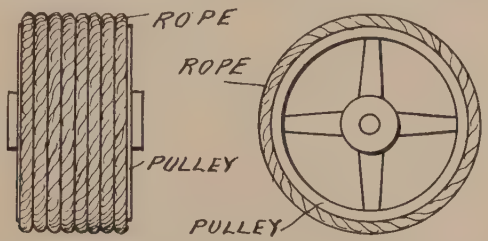
A very handy belt scraper can be made from the scythe of a mowing machine, as shown in the accompanying sketch. A handle



is attached by passing a bolt through the center of the blade and through the entire length of the handle. This tool is very easy to make and will hold an edge in good shape.

INCREASING DIAMETER OF PULLEYS

Here is a good way to increase the diameter of a pulley. Take a 4-strand Manila rope and make one end fast with a hook-shaped



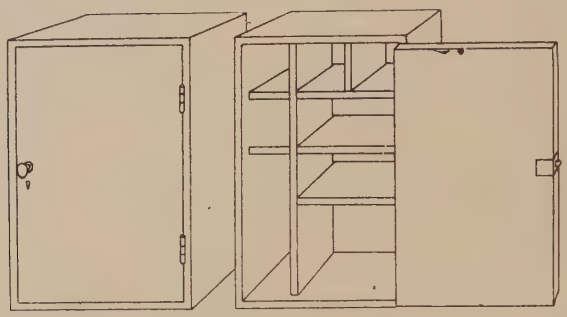
quarter-inch bolt. Wrap the rope tightly around the pulley, making the other end fast in the same manner as the first one. This is an inexpensive way to make a pulley larger and still leave the face true. It only takes a little time to do the work.

CHAPTER V

SAFETY APPLIANCES AND DEVICES

FIRST AID TO INJURED EMPLOYES

Few mills, even those of considerable prominence throughout the country, give any special attention to caring for employes receiving slight injuries. All mills should have a medical cabinet on the wall



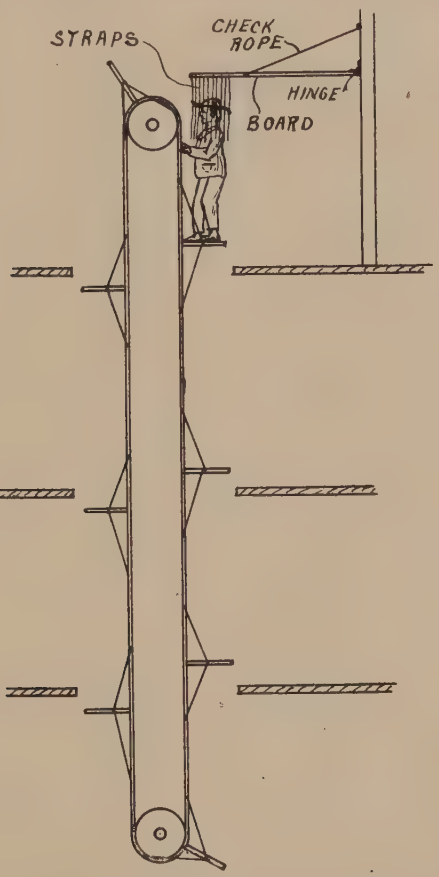
in some convenient place, and large enough to hold emergency supplies. Over each cabinet should be framed a copy of emergency instructions, which all the men should read carefully. These instructions should state briefly the proper course to pursue in case of different accidents, such as fractures, scalp wounds, etc. The case should be lettered "Medical Cabinet" and the key should be attached to a large tag and hung near the case.

The cabinet need not be expensive; it can be made of pine and nicely finished with stain and varnish. It should be large enough to contain as many shelves as necessary to hold the following articles, compactly arranged in their proper places: Eight ounces listerine; 8 ounces tincture of arnica; one package absorbent cotton; one roll of adhesive plaster, ½-inch; one package iodoform gauze, 2-inch; six rolls plain gauze, 1-inch; one package safety pins; 8 ounces carron oil; 8 ounces whisky; one roll Z. O. adhesive plaster, 2-inch; three first-aid packages; two rolls plain gauze, 2½-inch; one pair small surgeon's scissors; one rubber tourniquet. Place a list on the inside of the cabinet door and give instructions to the man in charge to see that the stock is at all times kept complete. The cost of the outfit is small and the benefit to be derived from it in times of emergency is great.

The cabinet must be made with a door and kept sanitary. The accompanying drawing gives an idea of its construction, and a description is not necessary.

DANGER SIGNAL FOR PASSENGER ELEVATOR

The accompanying sketch shows a danger signal for passenger elevators. It is to be attached at the top of the elevator and consists of a light board hung on a hinge, so that it extends over the step.



The step raises the board in its ascent and allows it to drop back The light straps hanging down are intended to warn a man that there is danger. He can then get off and not go over the top, in which case he might lose his life.

SLEEVE FOR THOSE ABOUT MACHINERY

A dangling coat sleeve and an open gear have been the cause of more than one man's losing an arm. The illustration shows something that will eliminate the possibility of such an accident.

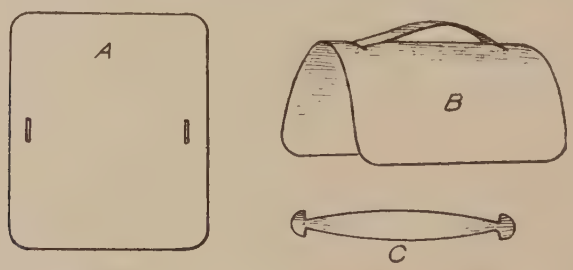
It is a jumper jacket sleeve, intended for men working about machinery. It is the same as a coat sleeve, but has no buttons on it,

and at the wrist has a piece of elastic to hold it to a close fit. Then when you reach over your head to dig out some dirt or relieve a choke the stuff will not slide down your arm to the shoulder, and the sleeve keeps the garment worn under it clean, too.

BELT MITTEN

Every man who has anything to do with running belts should protect his hands. The illustration shows a belt mitten for use in throwing runnings belts.

Take a piece of flexible single leather belting, place it in the palm

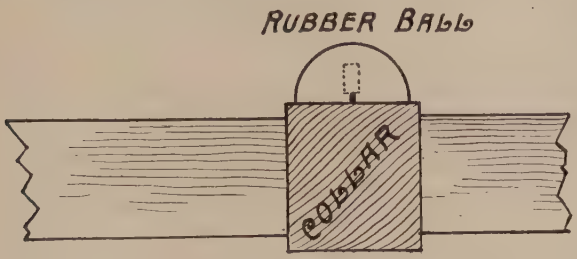


of the hand and bend it into a U-shape; this will give the size required for the hand. Next trim the corners as shown in *A* and cut the two slots indicated.

Then cut another piece of flexible leather in the form shown at *C* for a strap over the back of the hand, insert the two ends in the slots, and you have the protector complete, as shown at *B*.

SET SCREW GUARD

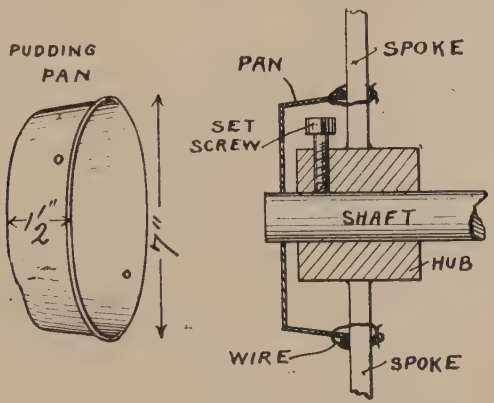
A safeguard for the dangerous set screw is shown in the cut given herewith. It is cheap and efficient, and consists of a solid rubber ball cut in two with holes in it just large enough to go tight on the set screw. It will stick on the fastest running shaft and can easily be



taken off when need be. The dotted lines in the figure show the set screw in the rubber. The ball can be cut out to fit the round collar or hub, as the case may be.

TIN PANS AS SET SCREW PROTECTORS

Good set screw protectors can be made from tin pudding pans about 1½ inches deep by 7 inches in diameter, the size, of course, being governed somewhat by the length and diameter of the collar and



set screw. Punch holes in the rim of the pan and fasten it to the arms of the pulley with wires. If a shaft projects beyond the collar cut a hole in the bottom of pan large enough to admit the shaft.

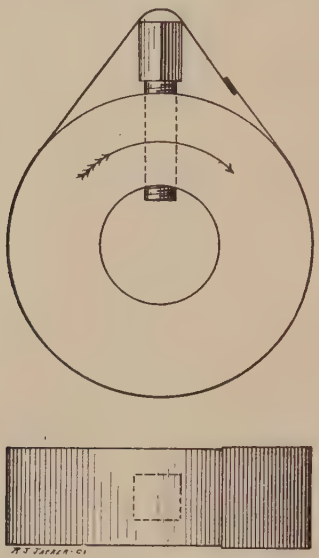
This does away with all danger of set screws and the cost is only

about 4 cents per pulley. This device cannot be used on line shaft pulleys, but for roller pulleys it is simple and efficient.

COVERING DANGEROUS SET SCREWS AND COUPLINGS

The set screw protector shown below is simple and effective and any miller with a sheet of tin and a pair of tinner's shears can cover every set screw in the mill in a few hours and with little or no expense.

You will notice the outside tap is a little wider than the inside, and runs backward, making it utterly impossible to catch on anything. To make it, cut a strip of tin nearly if not fully the width of the face of the collar. Then turn the wide end one-quarter inch. Place the strip around the collar and over the top of set-screw. Mark it



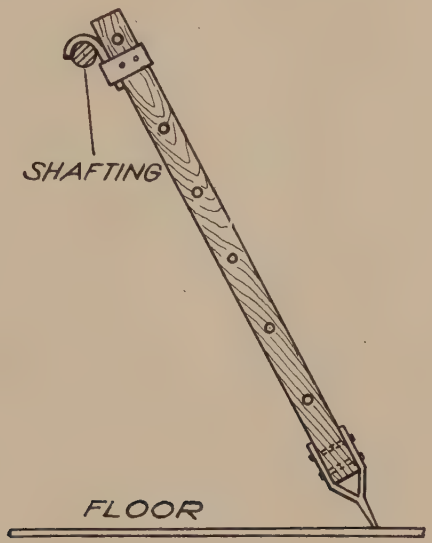
at the turned point, not at the bend. Cut off one-quarter inch longer, turn at the mark, hook with wide end outside, hammer down lightly on shaft. Place the band thus formed on face of collar opposite set-screw; lift onto head of screw and there you are.

This can be used just as readily and is as efficient in covering couplings where the heads and points of bolts are prominent. Let the tin be sufficiently wide to reach far enough on each side of coupling to effectually cover both heads and points of bolts.

MILL LADDER

A good ladder is a necessity around a mill. A ladder which is to be carried around should be as light as can be made to safely hold up the ones who use it. The light ladder is always the safest. It can be handled without danger of getting into the belts and wheels and should be made as narrow as possible, especially at the top, so that it will go in close places.

The form of ladder shown in the accompanying sketch is a good, safe one. It has sharp, pointed iron floor pieces that will hold in the

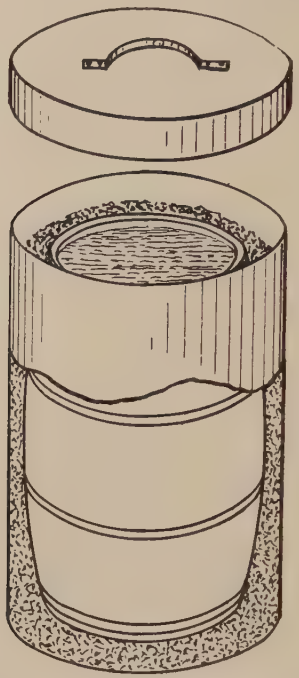


floor, for a mill floor can get very slippery. Such points will hold in any floor—in fact, they will not slip on a concrete floor. These and the safety catches shown on the top of the ladder make a safe ladder that can be used in corners and near machines without danger of slipping.

SAFETY WATER BARREL FOR FIRE

Millers have often been annoyed by the breaking of the hoops of their water barrels. This is due to the corrosion caused by the salt in the barrel. The unsightliness of the barrel and the odor coming from

same, to say nothing about the cost and the unpleasantness when the hoops break, are very disagreeable to the miller. To overcome this, make a galvanized iron tank a trifle wider and higher than the barrel,



and fill the space with sawdust. After the sawdust has become packed the barrel will not break, even though the hoops pass away through corrosion.

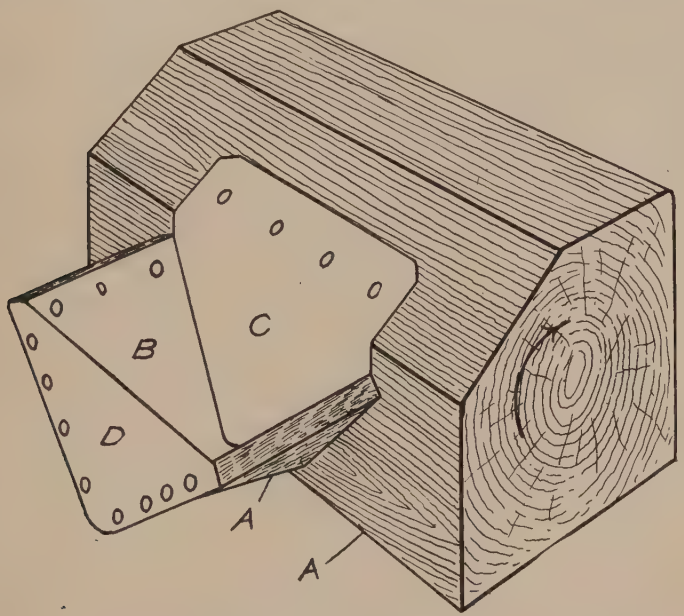
CHAPTER VI

ELEVATING AND CONVEYING

NON-ABRASIVE CONVEYOR

This conveyor wrinkle is intended to facilitate the emptying or removal of stock from conveyors, with the least abrasion or grinding action possible.

The sketch will explain the idea. *A A* represents the octagon conveyor stick and the two concavely placed conveyor flights usually found in all purifiers and machines having conveyors which remove



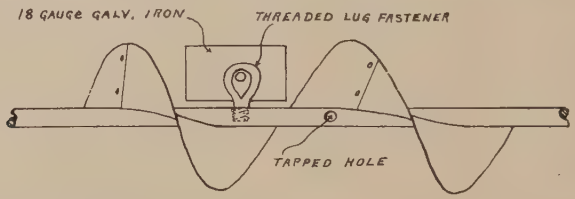
the stocks from the sides of the conveyor box. *B* is a piece of tin fitted and tacked to the insides of the flights to form the sides and back of a cup so that no stock can work or fall through the flights in their passage over or under. *C* is another piece of tin shaped to come down over the edge of the conveyor stick and tacked, the back pointed to fit into the pocket formed by *B* and the point of this tin is raised about a half inch to further facilitate free emptying of the cup. *D*

is a three-cornered piece of tin cut to fit over the top edges of the wood flights and tacked on to complete the cup, so that the conveyor, in turning, will bring the stock to this point and the cup will then act just like an elevator cup, picking up the stock in its passage through and dump it freely from the machine without injury from repeated dragging through the stock of the conveyor flights.

In case the conveyor runs under or discharges the stock from the machine without carrying it over the conveyor, tin *D* is omitted and tin parts *B* and *C* only used. The cup will then push all stock brought to it entirely away from the conveyor and out of the box, thus, either way, delivering the stock to rolls or following operation in the best possible condition.

IMPROVING WHEAT DAMPENING CONVEYOR

The ordinary conveyor used for dampening wheat for tempering purposes does not thoroughly mix all of the wheat with the water being applied, wheat directly under the stream generally getting most



of it, with insufficient mixing before the grain is discharged from the conveyor.

By attaching mixing flights, as shown by the sketch, the full length of the conveyor, the wheat is thoroughly mixed as it is carried forward and each grain more uniformly dampened than can be done without such flights.

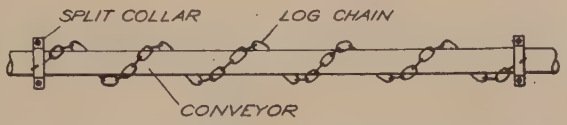
Get the required number of conveyor flight fastener lugs (threaded style) from the manufacturer or dealer for 4, 6 or 8-inch conveyor, as the case may be, and rivet to these a piece of 18 gauge galvanized iron just large enough so the lug may be turned into the threaded holes which have been drilled into the shaft at regular intervals, one-quarter way around the shaft from each other, and screw in lugs with attached flights.

The conveyor so arranged will consume a small amount of extra power, for which provision must be made if your present driving

arrangement is not ample, but it will be found a great improvement in dampening the wheat.

CHAIN CONVEYOR

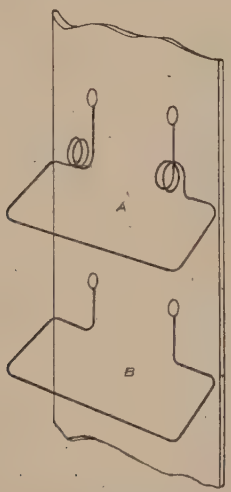
A common size logging chain wound around a shaft and drawn tight at each end with a split collar, makes a good emergency conveyor,



especially in narrow places where a line shaft is available.

KEEPING ELEVATOR LEGS CLEAN

The accompanying illustration shows plainly the manner of making and applying to elevator belts a device for keeping clean elevator



legging that is inclined to become foul from moisture and accumulated dust.

It is made barely to touch the leg on all sides, and in two styles, either with coil or straight springs, *A* and *B*, respectively. It is fastened with elevator bolts. No. 9 spring wire is the size to be used.

REMOVING HOT AIR FROM ELEVATORS

Herewith is a sketch showing a plan in use for removing hot air from the elevators used to carry stock from rolls to reels or sifters, which sometimes become pasty and smell musty.

The plan is so simple that little explanation is needed. A box is extended the full length of the elevator line near the top on the upgoing legs, as at this point the least stock will be drawn from them. In the box is placed a small cotton belt which removes all dust, the latter falling back into the elevator through the openings made for the suction.

Good results can be obtained by connecting with the eye of a

Fig 1 Fig 2

purifier fan. The belt has two or three small leather strips tacked across it to act as a drag, and should itself be much narrower than the box in which it runs in order to give the air a free outlet from the elevator leg to the fan.

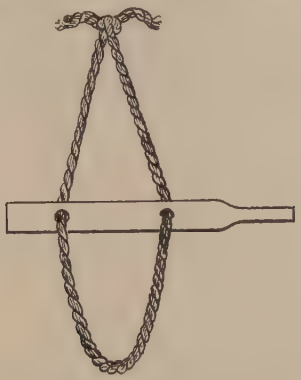
Figure 1 shows the general plan along the elevator line, and Figure 2 shows an end view of the box, with pulley and opening into the elevator leg. By this arrangement elevators are easily kept in a clean and sanitary condition.

TO TIGHTEN ELEVATOR BELTS

This device for tightening elevator belts is somewhat different from the usual block-and-tackle principle employed. Take a wooden roller about 12 inches long, a broom handle will do nicely, and flatten one end so that a monkey wrench will slip on for a crank.

Bore two holes through the roller about 5 inches apart, take a piece of small rope about 12 feet long, and put the ends through the holes. Tie the ends together, leaving the loose ends each about a foot

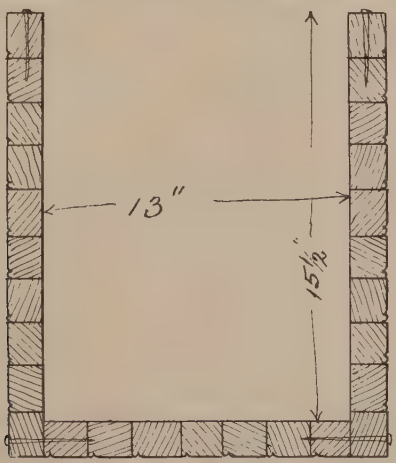
long. In using the knot is drawn up under the bucket which is above the buckle, and the loose ends tied together over the top. The loop below the roller hooks under a bucket below the buckle. Then the



roller, laying against the opening in the elevator leg, is turned with the wrench, drawing the ends of the elevator strap together as much as desired.

CLEVER WAY OF MAKING CONVEYOR BOX

The accompanying is intended to help some miller or millwright out in making a conveyor box when lumber for same cannot be had

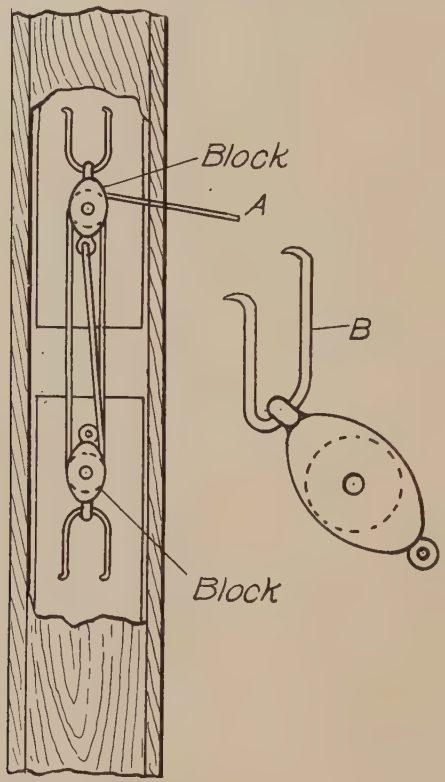


in proper widths. The sketch shows how to make a box for a 12-inch conveyor of strips 2 inches, and to make a neat job one corner can be beaded. The box can be made any length by nailing one strip on

the other, as you would crib a bin, making joints wherever convenient. A box made in this manner will not warp and will always remain straight and in place, and can be built by anyone.

HANDY ELEVATOR BELT TIGHTENER

This little elevator belt tightener is easily rigged, requiring only two small blocks and tackle and some rope, with a little rod iron. The method of rigging up this contrivance is as follows: Buy two double



blocks of galvanized iron made to carry a ¼-inch rope. Such blocks can be purchased at about 15 cents each at any hardware store. Make the hooks *B*, by which the blocks are attached to the belt ends, of 3/16 rod iron, sharpened at the ends. After attaching the blocks to these hooks make them fast on each side of the splice. Then by pulling down on the loose end of the rope, *A*, the belt can be tightened as much as is desired.

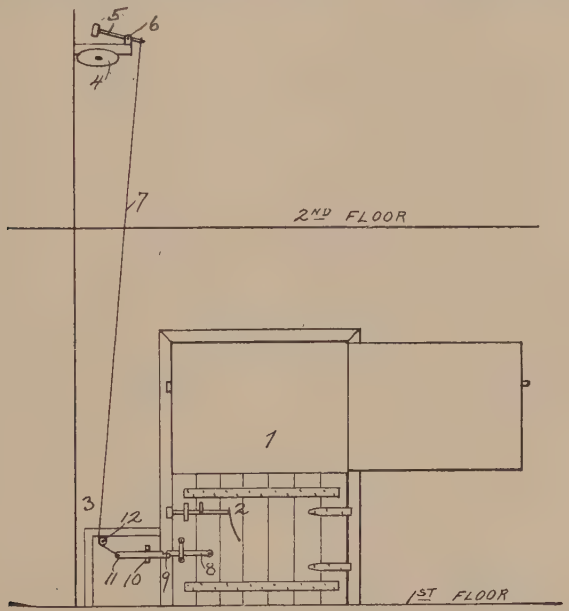
CHAPTER VII

SIGNALS AND INDICATORS

ALARM FOR MILL DOOR

The sketch shows an alarm for a door which will be found of use in small mills where there is no helper.

The idea is perhaps plain enough without any special explanation; but to make it perfectly clear the figures will show the different parts. An old-fashioned double door is shown at 1; the latch commonly used



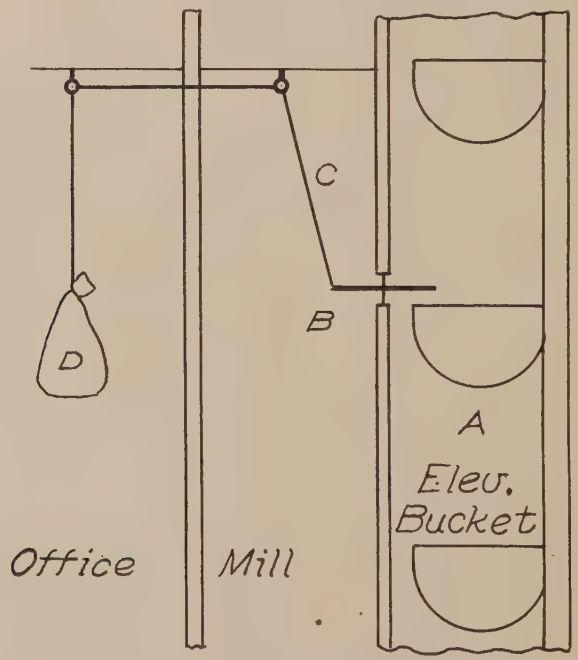
on these doors is shown at 2; 3 is the door alarm which sounds when the door is opened; 4 is an old circle saw, 12 inches in diameter, which gives a heavy sound; 5 is a piece of iron on handle for sounder; 6 is a hole through center of handle, with pin in it, so it can work on a pivot or hinge. The sounder or hammer 5 is worked by a cord 7. A latch on door to work lever to cord is shown at 8, while 9 is a notch in lever to catch latch on door; and as the door is opened the latch draws this lever back about 9 inches, and of course by that time

it slips off, which lets hammer fall on saw. As the door is closed this will latch itself. The hinge on which the lever works is shown at 10, while 11 shows where the cord is fastened to lever, and 12 indicates a small pulley or spool for turning the cord and letting it work freely.

As will be seen, when the door is opened the alarm sounds and can be heard over the entire mill above basement, even when the mill is running.

ALARM FOR ELEVATOR LEGS

This little device will save a lot of time and many steps to the miller when he has work in his office, particularly if he has elevators up stairs that frequently choke, as wheat elevators occasionally do.

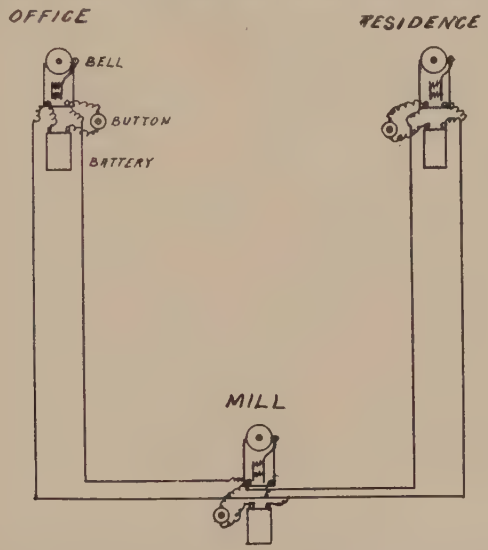


As shown in the diagram, *A* is the elevator leg, in which a hole is cut at *B*. A piece of leather is held loosely in the hole by a pin, the leather projecting far enough into the leg to allow the cups to flip it, causing the cord *C* to jerk. The cord is run through screw eyes to the office, or down stairs as the case may be, and a piece of

sack, *D*, tied to the end. The motion of *D* will tell the man in the office that his elevator is running, if it is not moving the elevator has stopped. This same device may be connected to any machine upstairs, such as a purifier, sifter or separator.

SIGNAL FOR MILL, OFFICE AND RESIDENCE

The accompanying diagram shows an electric signal system which will save the miller many steps. Two wires are run from the office through the mill to residence; the necessary bells, batteries and buttons are connected, as shown in the illustration, and with a simple code



messages can be sent and received by opening and closing the circuit with the push button.

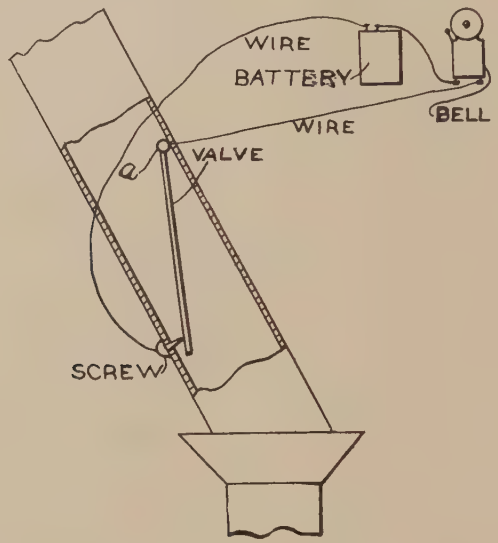
Below are some signals, which can be altered as desired. The dots indicate rings and the dashes the intervals between rings:

.....———.....	Second miller.
.....———.....———.....———.....	How is the mill?
....——....——....——....	O. K.
....——....——.....	Hot box.
.....——....——....	Choke.
....——....——.....——....——....	Dinner.
....——.....——....——....——....	Visitors (wash up).
....——....——....———.....	Creditors (hide).

FEED ALARM

The accompanying sketch shows a device which is handy for using on attrition mills and feed rolls. It will give warning when the feed passes the valve, and will thus give the operator time to start on the next grist.

It will be noticed that the device is quite simple, and anyone can make it in a few minutes and at very slight expense. The iron bell,



wires and switch will cost only about 75 cents, and any dry battery will answer the purpose, at a cost of from 25 to 50 cents.

It will be seen that the feed will raise the copper valve and after it passes out, the valve will drop on the screw and make the circuit. The valve is of copper; *a* is a brass rod running through spout. The other parts are marked on sketch.

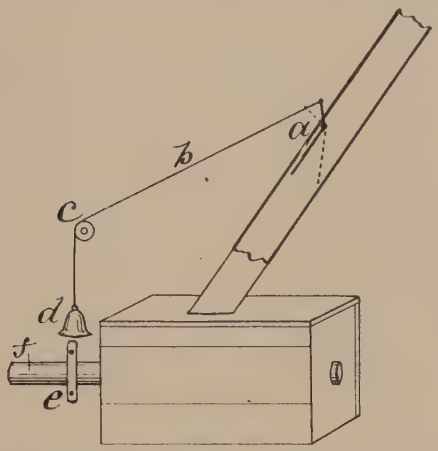
HOPPER ALARM

The diagram shows a device which will prove of great assistance to many. It is an alarm placed between hopper and roll to notify one when the hopper is empty. It is a very simple little device and can be made by anyone with but little cost.

Letter *a* represents a valve with lever attached; *b*, cord running from lever over small pulley *c* to bell *d*. Letter *e* is a clamp on feed

roll shaft. This clamp is made by taking a strip of wood about 4 inches long and 1½ inches wide by 1 inch thick. Cut a hole through center of block the size of shaft. Then saw down through the center of block lengthwise. Place one of the strips on each side of shaft and draw them together with screws.

While the spout is full of grain the valve and bell will remain



as in diagram; but just as soon as the spout gets empty, the valve falls, which drops the bell within reach of the clamp, causing the bell to ring.

CALL BELL SYSTEM FOR MILLS

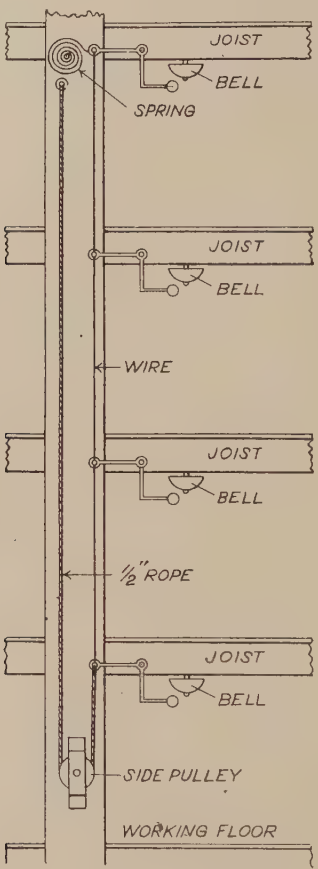
The accompanying sketch shows a call bell system which consists of a series of tappers attached to the joist, on which is fastened a gong, bell, old piece of saw, or piece of steel, whichever may be handy. Attached to each of these tappers is a piece of wire, which prevents stretching or shrinking, extending from working floor to garret.

A half-inch rope is securely fastened to the tapper on the working floor and extends down around a side pulley which is fastened to the post or elevator leg, and up to the garret and is there made secure.

To ring the bell, give one pull upward on the rope, and all the bells will be struck simultaneously. The number of taps for each floor can be arranged understandingly to all employes. For example: One tap calls the miller in charge to the working floor for consultation; two taps call all employes supposed to assist in relieving chokes,

adjusting belts, or whatever the trouble may be, to the first floor as speedily as possible; three taps, second floor; four taps, third floor, five taps, fourth floor, etc.

Any employe, no matter on what floor he may be, can hear the taps distinctly, and, by counting same, he can proceed immediately to

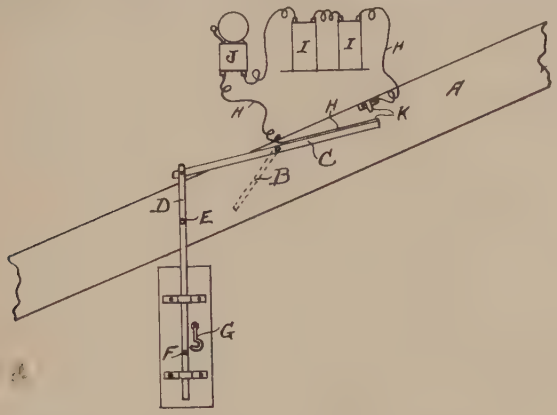


the floor indicated by the number of taps. For example: The oiler or sweeper working in garret finds choke, slipping belt or a hot box, and races down stairs from floor to floor looking for assistance; finds miller on the first floor, and both proceed to garret only to find that choke has ruined a cloth, the slipping belt is beyond repair, or the hot box is on fire. With this device speedy assistance can be obtained from any floor and serious danger perhaps averted.

ELECTRIC SPOUT ALARM

The accompanying sketch shows an electric alarm as applied to spouts running full of grain or other material.

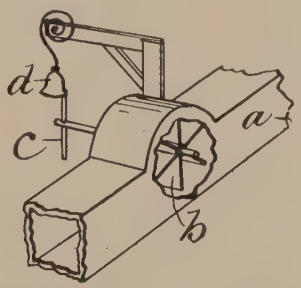
In the sketch, *A* is the spout; *B*, a tongue in the spout; *C*, a bar



or lever outside of spout; *D*, bar loosely connected to bar *C*; *E* a loose joint; *F*, a pin in bar; *G*, a hook to engage with pin when spout is empty; *HH*, copper wire; *II*, batteries; *K*, copper or brass plates or plugs to which wire is connected.

ALARM FOR GRAIN BINS

The accompanying drawing illustrates a device which, if properly constructed, will save many a choke.



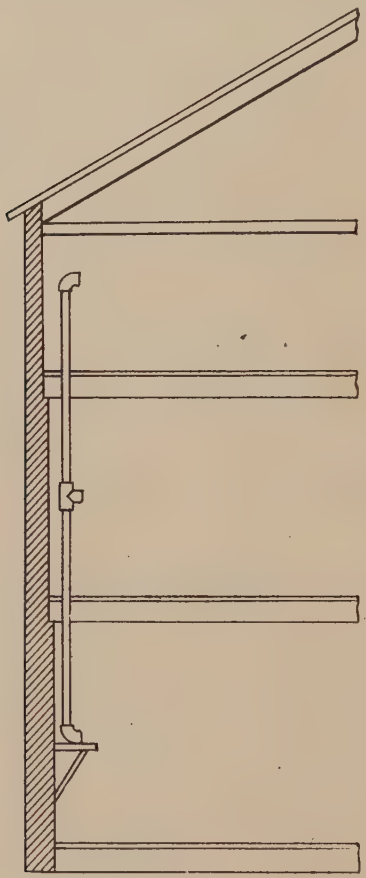
In the spout, *a*, which is stationary, is located a small six-armed fan, *b*. To one end of the fan shaft is attached the crosspiece, *c*. The spout, which is of the ordinary kind, is attached to the bin at the highest point which the grain reaches when the bin is full.

When the bin is full the grain rushes down the spout and strikes

the fan, causing it to rotate and the arms of the crosspiece to strike the bell, *d*. The grain may be spouted to a bin or caught in a sack.

SPEAKING TUBE FOR MILL

The drawing herewith illustrates one of the most useful, cheapest and simplest devices that can be placed in a flour mill. This drawing shows a section of a mill building with a common ¾-inch or 1-inch



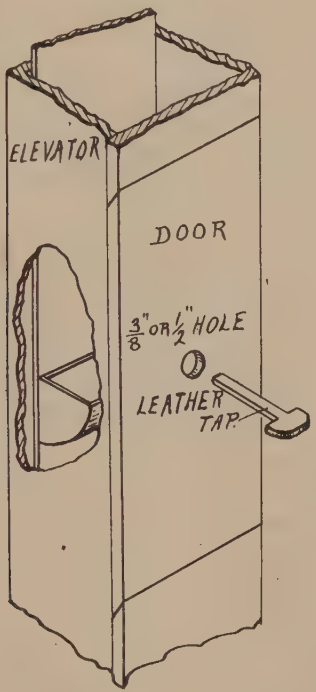
gas pipe placed upright running through the different floors, attached to the lower end of which is an elbow resting on a wall bracket, which supports the weight of the entire pipe.

This pipe, beginning with the elbow, extends upward through the

first floor to the second story, where there is a tee placed at suitable height, the pipe continuing on from this through second floor, terminating with an elbow in the third story. It is plain to see that the miller can talk to his helper from any floor to any other floor in the mill. It is only necessary to strike a few light, quick blows with any light instrument to call help to the tube, when instructions are quickly, easily and plainly given.

ELEVATOR SIGNAL

The accompanying sketch shows a very simple way by which the miller can tell if his elevator is running as he is making his rounds.



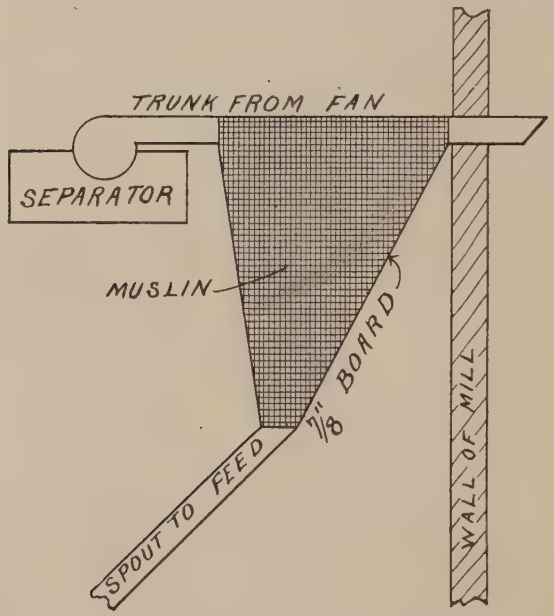
Bore a hole in the door of the elevator or at any other point that will be convenient, ⅜ or ½ inch in diameter. Take a piece of belting and cut it so that it will go through the hole and allow the elevator buckets to touch the belt. Cut it in the shape shown and its motion will tell you at a glance whether or not the elevator is running.

CHAPTER VIII

SEPARATION AUXILIARIES

DUST AND SCREENINGS SETTLING CHAMBER

This device consists of running a fan trunk from a cleaner to the wall, as is done in the ordinary way. Then, at a point beginning near the wall, the bottom should be removed for a space of from four to six feet. Then put the two sides of the hopper underneath the trunk the same width as this bottom and cover the other two sides with



unbleached muslin. Spout from the points of this hopper to the feed bin. When the wheat cleaners are in operation a greater part of the heavy dust and all the cheat and screenings that are lifted by a fan will be precipitated in this chamber, and will run to feed bin or feed grinder, as they may be spouted.

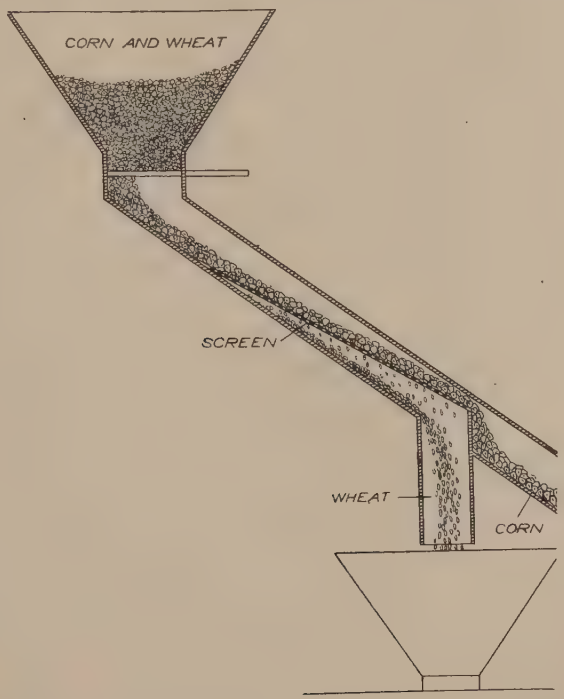
It is important that this settling chamber should be near the wall, since if a trunk is of any considerable length beyond the settling chamber it will gradually fill up with light dust on the bottom,

but if only a few inches or a foot remains it will not become clogged, by reason of the lighter pressure of air that would exist after the muslin sides are put onto the chamber.

One miller who is using this device claims that in cleaning 250 bushels of wheat he got 170 pounds of screenings through this device which would otherwise have been blown out into the mill yard. At the time he did it this weight of feed was worth $1.20. This would indicate that it could be very profitably employed by any millers who are not at present using the most modern and up-to-date dust collectors.

SEPARATING WHEAT AND CORN

The illustration shows a simple device for cleaning corn, or for separating wheat from corn. It needs no explanation. It will also

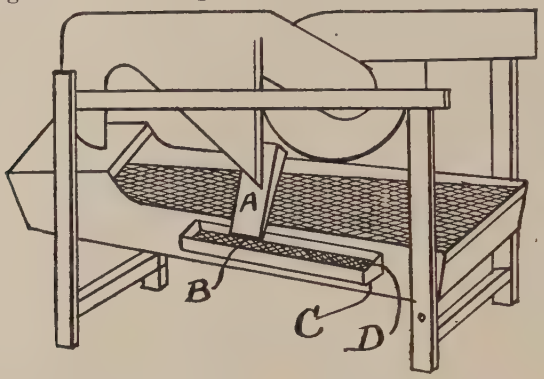


do good service in cleaning corn in which rats and mice have been lodging. Perforated metal with the rough side down is preferable to use.

SCREENINGS SEPARATOR

The accompanying wrinkle is designed for the purpose of separating the straws from the screenings that come from the first suction of a separator.

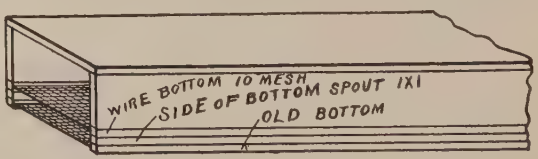
Referring to the drawing, it will be noticed that the sieve, *B*, is



connected to the side of the separator sieve. *A* conveys screenings to sieve *B*, the straws, etc., discharging over tail at *D*, while the screenings discharge at *C*, to roll or bin. Any miller can make this sieve and connect same in a few hours.

CLEANING SPOUT

Millers who have never tried the plan of putting a screen in the bottom of the spout leading to the cleaner have no idea how much dirt it separates from the wheat. The arrangements necessary to make are very simple, and the result accomplished is worth the ex-



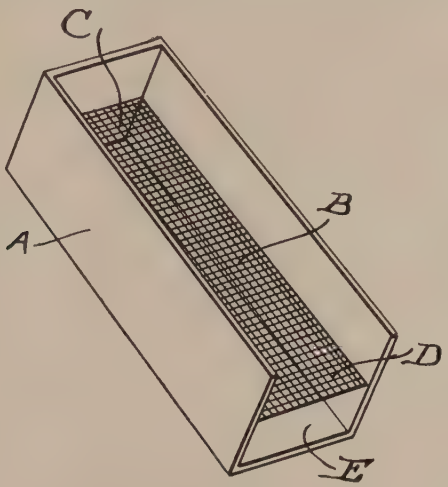
pense. Remove the bottom from a spout just ahead of the cleaner, and cover the space, which can be long or short, as desired, with strong wire of No. 10 mesh. Under the wire, and on each side of the spout fasten 1x1-inch strips of wood. Cover the old bottom of the spout with tin, and replace it on the spout, fastening it to the 1x1 pieces. This leaves a space of 1 inch between the wire and the tin.

There are now two spouts, as shown in the accompanying cut.

The old one is for carrying the wheat, as before, and the tin-bottomed spout underneath for carrying off the dust and grit. This can be disposed of as is most convenient. It is astonishing the quantity of dirt this simple arrangement will separate from wheat that looks clean.

STRAW SEPARATOR

The accompanying sketch shows a device for removing straws, etc., from the wheat that tails over the wheat separator. All millers experience more or less trouble in having this separation made.



Referring to the drawing, it will be noticed that *A* is the sieve spout; *B* is the sieve. Straws and the like from tail of separator enter at *C*. The straws discharge at *D*, and the wheat passing through sieve *B* discharges at *E* and is returned to elevator or storage.

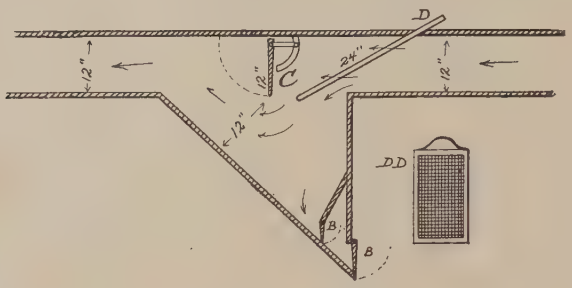
IMPROVED AIR TRUNK FROM CLEANERS

The accompanying sketch represents a dust spout or air trunk from grain cleaners having an expansion chamber or pocket on its lower side. At the lower point of this pocket are the two hinged valves *BB*, which relieve each other in discharging such heavy stock as may be deposited.

C is an adjustable valve made the full size of the dust spout proper. *D* is a screened slide which is set in the spout at the angle shown in sketch. This slide is shown by *DD*. It is a light frame

double the length of valve, *C*, and the full width of the spout. The frame is provided with a suitable handle for pulling it out and is covered with a wire cloth having 6 meshes to the inch, the smooth side being placed toward the blast.

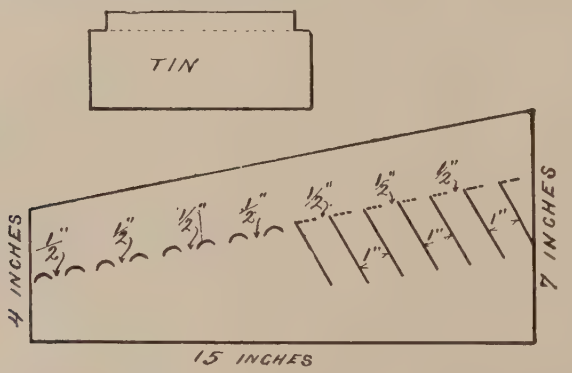
By adjusting valve *C* the stock at valves *BB* can be controlled.



Screen *D* will remove straws, sticks, chaff, strings, etc., which cause so much trouble when blown into tubular dust collectors.

RUBBISH SEPARATOR

If you are much troubled with lumps of frozen wheat, coal, stones, sticks and straw, cut a piece out of the lid of the spout, 15 inches long, and make a trap in the following manner: Cut two pieces of ¼-



inch hardwood, 15 inches long, 4 inches wide at the inlet and 7 inches wide at the lower end. Cut slots in the side with ½-inch spaces between them, putting stout tin or galvanized iron in the slots. Between the straight slots there is an inch space, half of which will be filled by the tin being bent over to the same pitch as the spout, cutting the

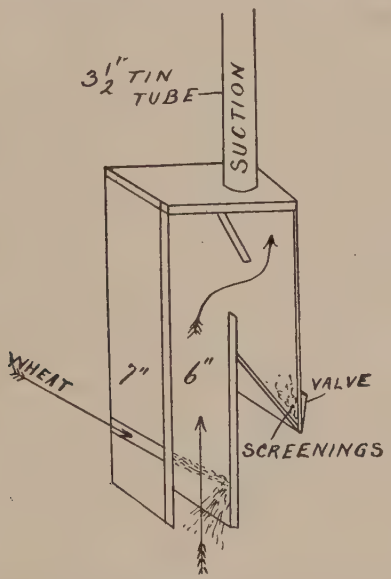
tin in shape indicated in the upper figure, bending over the narrow portion.

Care must be taken that the lower edge of each piece of tin falls well within the top edge of the next, otherwise the wheat will back up and overflow. The right number of slots are not in the sketch, but measurement will rectify that.

There is no bottom, of course, the two sides being held together by the tin. Take care that the first curved slot is at least one-half inch above the bottom of the spout. This rig will easily let through 40 bushels per hour. If you find that wheat comes down too freely, put a saw cut through the spout a foot above the rig. With a tin slide you can then regulate it to suit.

PUTTING SUCTION ON WHEAT.

The sketch shows an arrangement for aspirating the wheat as it enters the stock hoppers. The device is made of wood, the leg being lined with iron to avoid being worn by the wheat. It should be placed



just above the hopper and connected to suction fan as indicated. The wheat should then be spouted so that it enters the leg in a thin, broad sheet in order to let the air pass freely through the wheat.

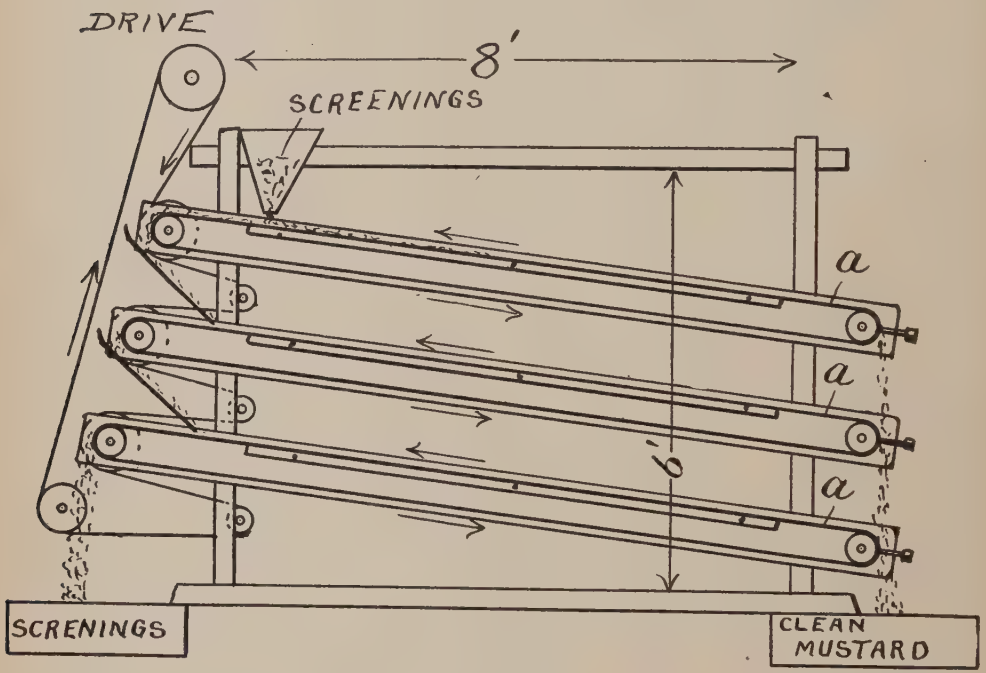
A fan suitable for supplying the suction can be arranged at small

cost, or the suction may be had by connecting with a separator fan. Anyone adopting this plan will doubtless be surprised at the amount of dirt it will remove.

WILD MUSTARD SEED SEPARATOR

The accompanying sketch shows a wild mustard seed separator. It is designed to separate all other seeds and dirt of all kinds from the mustard, leaving the latter perfectly clean for the market.

In some localities millers are troubled with this weed in their wheat, and, owing to the fact that it has been found impossible to



clean it perfectly, it has little or no value. As the device herewith shown will clean it, the mustard seed becomes a commercial article.

The sketch will explain itself. The fine screenings drop on the leather belt marked *a*, which varies in width according to the amount of work it is required to do from one inch to four feet. It must be smooth, so the mustard seed will roll off. The other weed seeds, not being perfectly round, will carry uphill and dump down onto the next carrier, giving the seed two chances of separation.

CHAPTER IX

ROLL APPLIANCES

ADDITION TO THE TRAMPLATE

The tramplate is of far greater importance than many realize. In its present form it is something of a gold brick. It will deceive the inexperienced, and its value to good milling is not appreciated.

Figure 1 of the accompanying sketch shows an end view of a pair

Fig. 1 Fig. 2

of rolls, assuming *A* to be a true level, *B* the adjustable roll and *C* the stationary roll. If the opposite ends of these rolls were exactly the same as the ends shown the rolls would be in perfect tram—according to the tramplate, although the adjustable roll may be from 1/8 to 5/8 inches higher than the stationary roll.

The end block is represented by *D*, and the opening between it

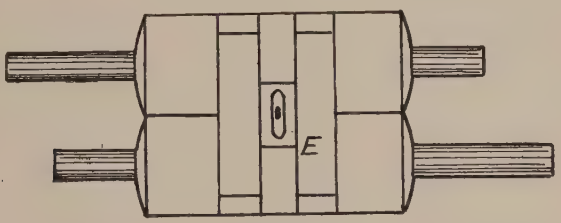


Fig. 3

and the stationary roll *C* might well be called a "yield escape." Figure 2 shows a similar view of a pair of rolls on the same level. If the opposite ends of these rolls were exactly the same as the ends shown, the rolls would be in perfect tram, parallel with one another and level across the top.

Figure 3 represents a pair of rolls with a tram plate placed

thereon. *E* represents a small spirit level attached to the tramplate. This is the missing link, and fills a long felt want in the work of tramming rolls.

Assume that Figure 1 represents a pair of smooth rolls in motion. Here are some of the conditions we would find:

(1) Tendency of the adjustable roll *B* to climb *C*, commonly called riding.

(2) Play in the adjustments, promoting vibration and quivering.

(3) Roll flaking easily and ringing.

(4) Impossibility of adjusting end block properly or making scraper work satisfactorily, due to riding and quivering.

(5) Tight belts and more power.

(6) More oil and hot bearings.

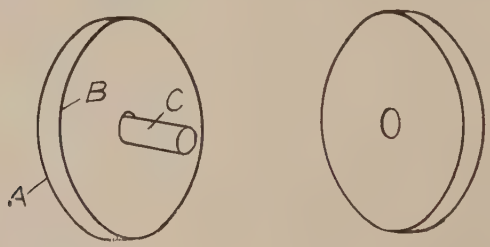
(7) Inferior work—bad results.

Just such faults as these may cause an otherwise good machine to be condemned, sold at second hand, or thrown on the junk heap.

Assume that Figure 2 represents a pair of rolls in perfect tram. This pair would not have the faults just enumerated. They would require less power and less oil, would create less heat; end blocks and scrapers could be adjusted properly; they would grind better and cooler; the tendency to climb, ride, flake, flatten and ring would be reduced to a minimum. The result would be better flour, more of it, and a better yield.

TRAM WHEEL FOR RUNNING ROLLS

Many times it is necessary to shut down a mill on account of a single pair of badly running rolls. This is frequently the case after a



box has been rebabbitted or has been cooled down after overheating. To avoid all this there is a simple device for tramming running rolls, rolls that are in adjustment and have the grinding contacts together. Take a wheel which has one rim, *A*, exactly true, a drive pulley of a

feed roll will do the work well if it is true, and insert into it a stick of wood, *C*, as an axis.

The wooden axis, *C*, should be four or five inches long and of such a size at one end that the pulley will revolve freely on it. A nail should be driven through it at the lower end to keep the wheel from falling off. The lower end of the axis should not protrude beyond the true side of the wheel, or *A*, any more than can be avoided.

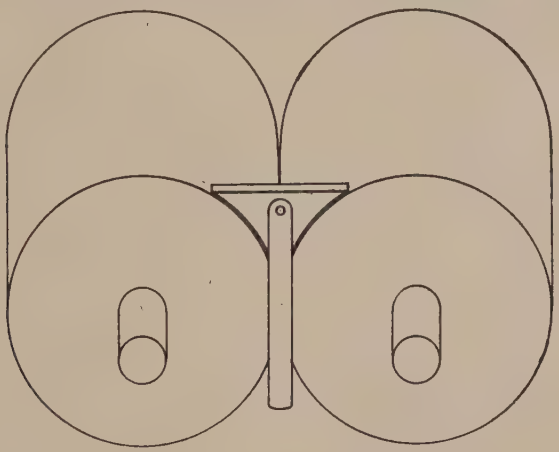
The upper rim of the wheel, *B*, need not be exactly true, but the rim, *A*, which is the one used, should be.

To ascertain the position of the rolls take this little apparatus and hold the wheel, by means of the protruding axis, *C*, so that the true rim of the wheel, *A*, rests upon the rolls, just as one puts the tram plate on them. The wheel will revolve quickly, being driven by that end of the roll which is the highest.

Tram just as you would with a plate, holding the wheel on the rolls with one hand and using the other to level the rolls. When they are level the wheel will stop revolving.

SELF-ADJUSTING END PIECE FOR SMOOTH ROLLS

The accompanying sketch is self-explanatory to millers who know the evil of leaky rolls. If the end-piece is not fitted perfectly to point of contact of rolls a portion of the stock will leak or float over the



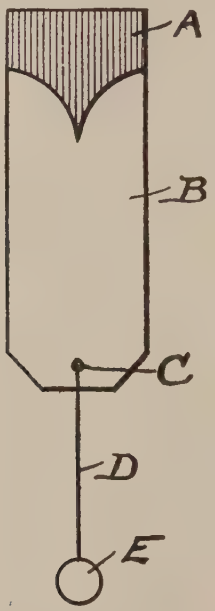
ends, especially on the last two or three middlings reductions, missing one reduction and proportionately loading the next. This keeps on to the end, which means inevitably a poor yield.

To make the self-adjusting end-piece, take a soft pine board ½-inch or ⅝-inch thick and lay out two circles, the size of the rolls for which the end-piece is intended; saw out end-piece with the grain of the wood running to the points of contact of circles, and scrape it down with glass until it fits perfectly. Cut a strip of copper the thickness of hoop iron, 8 or 10 inches long and 1½ inches wide. Drill a hole through one end of this strip and screw it to the end-piece. Drop the copper strip over the end of rolls and your trouble with leaky rolls will be a thing of the past.

PREVENTING WASTE AT ROLL ENDS

The device illustrated by the accompanying drawing is to keep soft stock from working over the ends of smooth rolls.

As indicated, *A* is a piece of leather cut to fit between the rolls;

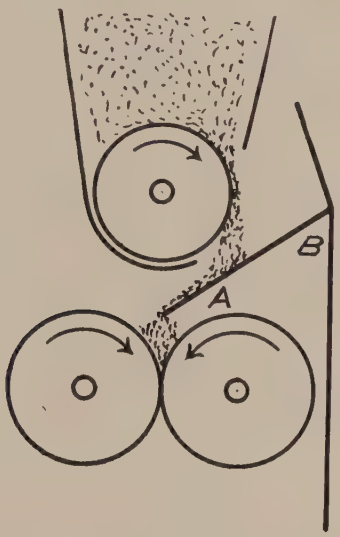


B is a piece of galvanized iron to which *A* is fastened; *C* is the hole in which cord or wire, *D*, is fastened, suspending weight, *E*.

A light weight is all that is required. It will hold the leather close to the rolls until it is all worn out. Slip the galvanized iron back between the ends of rolls and housing, allow the leather to rest on the rolls and tie on the weight.

FEEDING ON THE FAST ROLL

Feed rolls usually direct the stock onto the outer roll, whether it be the fast or slow one. You will get much better results if you



always guide the feed onto the fast roll. The accompanying illustration shows how to do this when the slow roll is receiving the feed.

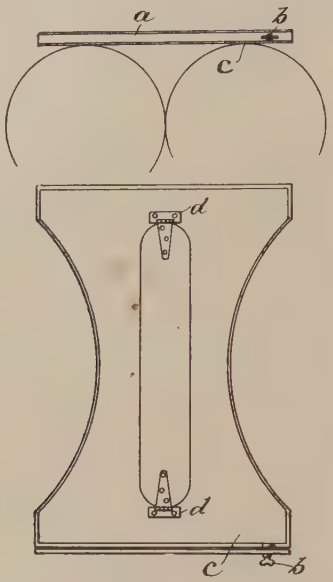
TRAMMING ATTACHMENT

The attachment shown in the illustration consists of a steel bar about a quarter of an inch thick pivoted and fitted to one end of an ordinary stiff tram, whereby the miller is enabled to tram his rolls while in motion. In the sketch, *a* shows the steel bar pivoted to one end of tram; *b* is the pivot; *c* point on tram where dressed surface should be filed away, allowing the steel bar to take its place at that bearing; *d d* are hinges to hold tram in position.

After you have pivoted and dressed it so as to have both top and bottom flush with the dressed surface of end of tram to which you attach it, remove the bar or lever and file away that portion of the tram bearing on the back roll next to pivot. For a pivot use a small thumbscrew, which will enable you to give the bar sufficient play to permit of a free up-and-down motion. Take a small pair

of butt and strap hinges and fasten them so you can push them down between the rolls to hold the tram in position while in use.

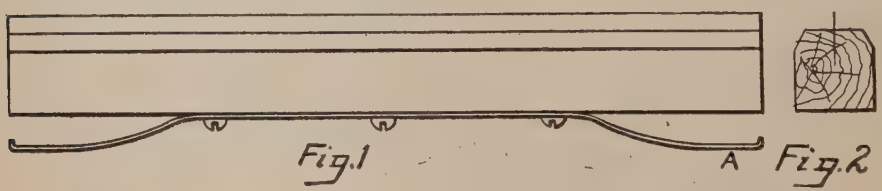
It will be noticed that with the use of this lever attachment the amount your rolls are found to be out is exaggerated by length of



lever. When the rolls are perfectly parallel, the bar and dressed portion of tram present a smooth surface; but when the least bit out, it will cause the end of lever to raise or lower, as the case may be, and the imperfection can be easily detected by passing the finger over the two surfaces.

ROLL SCRAPER

The accompanying sketch shows a roll scraper for smooth rolls. It is made of common bailing iron (the kind sacks are tied up with)

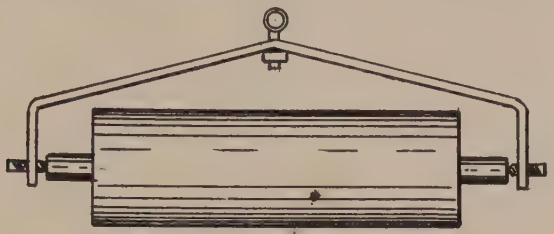


both for the scraper and the spring. Fig 1 shows the scraper complete; Fig 2 shows how the scraper iron is set in the wood by sawing a slot

lengthwise in the wooden strip deep enough to let in about two-thirds of the iron scraper.

DEVICE FOR LIFTING ROLLS

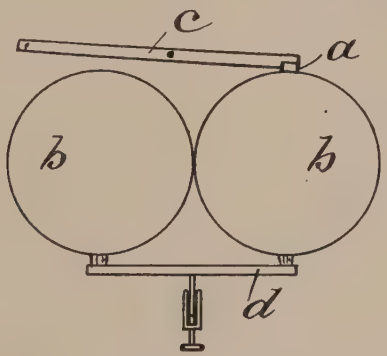
The sketch shows a simple device to assist in taking rolls from their frames. It consists of a bar of steel of adequate strength in the



shape shown in the accompanying cut. At each end of the bar are large pointed set screws used to screw into the ends of the rolls in lifting. The chain lift is hooked into the eye at the top of the bar.

IMPROVISED ROLL CLEANER

The accompanying wrinkle is not intended to take the place of a scraper or a brush, but millers occasionally find themselves in a posi-



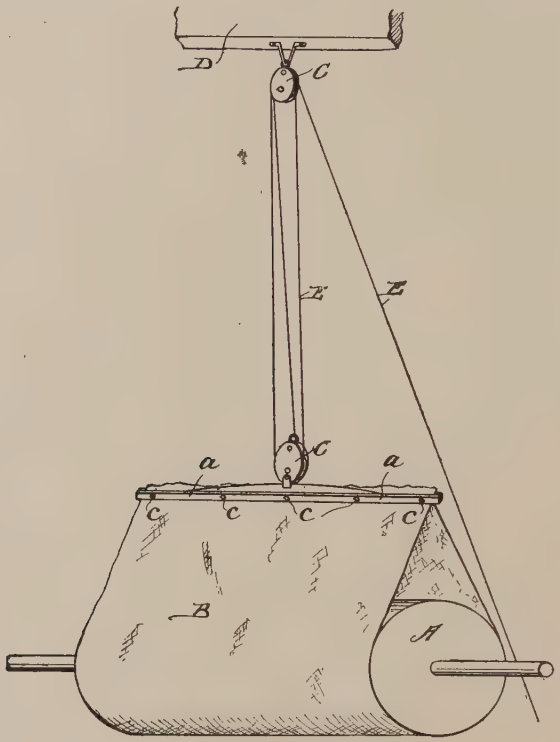
tion where temporarily, at least, some sort of a makeshift must be resorted to, especially if the regular roll brushes are worn.

In the sketch, *a* shows an oblong piece of wood covered with cloth; *bb* are the smooth rolls; *c* is the lever to hold the improvised brush, and *d*, the regular roll brushes. The oblong piece of wood, *a*, extends the length of the roll and is covered nicely with an old flour sack. The sack will not burn or wear out in a day or two, but will

last for a month or more, and as three sides can be used, it will wear quite a long time.

ROLL REMOVER

The following sketch shows a simple roll remover that needs little explanation. In the sketch, *A* shows the roll; *B* canvas bag;



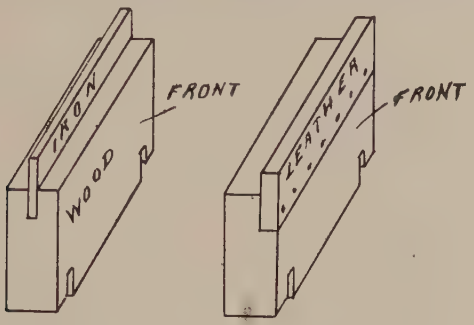
C, the tackle blocks; *D*, joist above rolls; *E*, rope in tackle block; *a*, clamps for canvas bag, and, *c*, thumb screws with nuts.

In operation, simply open the rolls a little and pass one end of canvas down between rolls and up between clamps. The clamps should be made of as light bar iron as possible consistent with strength. Fasten with thumbscrews and nuts as shown in sketch.

There is no danger of injuring the corrugations of a break or scratch roll when taking out or replacing the same with this appliance.

GOOD SUBSTITUTE FOR ROLL SCRAPER

The accompanying illustration shows a substitute for a roll scraper which has produced good results in practical operation. The idea



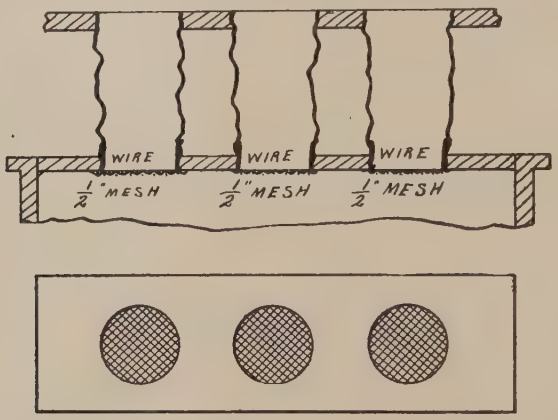
will be apparent from the illustration, which needs no further explanation.

CHAPTER X

SIFTERS

DOUGH BALLS IN SIFTERS

Those who have trouble with dough balls choking up the cleaning circulation on their sifters will find their labor and annoyance lessened by adopting the device figured in the annexed sketch. Wire



of about half-inch mesh is placed on the under side of the opening through which the material enters the machine. The stockings should be loosened occasionally and all dough balls removed. If they are allowed to accumulate too much they will stop up the wire and cause material to back up.

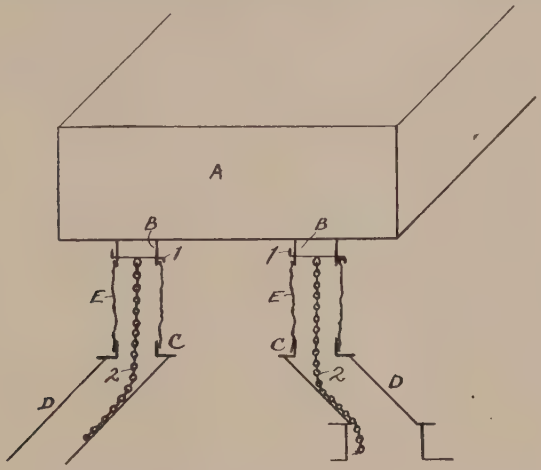
KEEPING SIEVE SPOUTS CLEAR

In the accompanying sketch, *A* represents a sieve box; *B*, the tin spout used to connect stocking. *E* is the cloth stocking connecting *B* to *C*. *D* is the discharge spout. Very often it is necessary to run spouts as shown in sketch where machines are set two or more high; and when so constructed very often continued trouble results.

Make a perforation in center of each side of spout *B*, large enough for a No. 8 wire. Then make a loop in a piece of No. 8 wire, same being long enough to pass through spout *B*, and extend one-half to

one-quarter of an inch on each side, then slip both ends through the perforations and bend the extended ends in opposite directions.

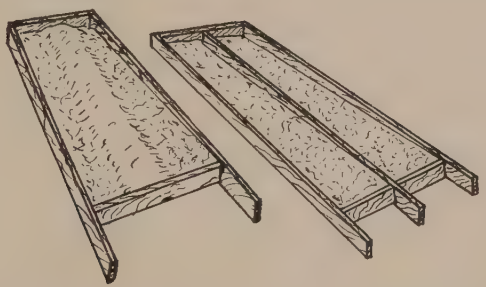
Attach the desired length of about No. 14 brass jack chain on



loop 1-1, dropping through stocking spout into wood spout below. Then secure stocking over wire 1-1, and spout at *B, B*. The results will be satisfactory.

SIFTER IMPROVEMENT

In sifter bolting, the light stock floats to the top, and in some cases remains on top. In the illustration shown herewith the left hand figure illustrates how stock will form a ridge on a sifter sieve.

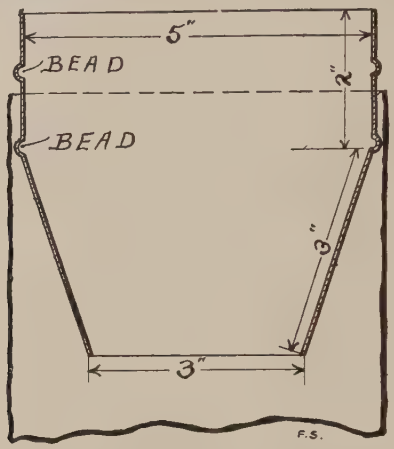


This ridge will shift from side to side just about three inches, or as much as the machine has throw, but remains intact. A small handful of flour on this ridge at the upper end will follow the ridge

down and tail over to the purifier. To remedy this put in a dividing strip, as shown in the right hand figure. This will break up the ridge and make the work far better. With this device put the cloth cleaners underneath the silk.

TIN STUB SPOUTS

If you have trouble with cloth spouts wearing out on break stock, have some tin stubs made after the plan shown in the sketch,



to take the place of the sifter spouts. Being made hopper-shaped, the spout carries stock away from cloth spout, and it drops down the center without touching the cloth, thus making a great saving on same.

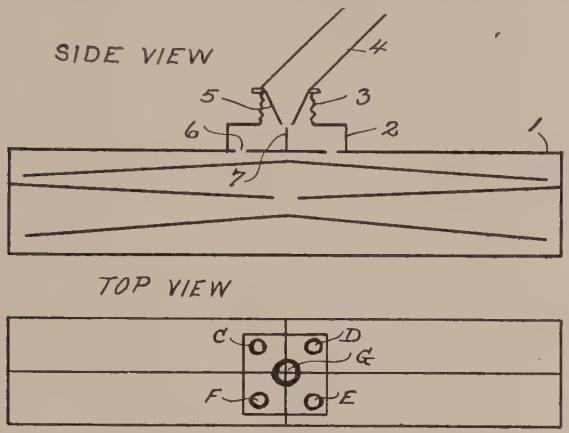
FEEDER FOR A SWING SIFTER

The usual four-section swing sifter is fed by four stockings, the spouts being valved four times, and it is often impossible to keep the stream evenly divided to each section. The feeder shown herewith was devised to overcome the difficulty, and has proved a complete success.

The feeder consists of a square box, 2, with openings in each corner, *C*, *D*, *E* and *F*, to feed each section of the machine, as indicated at 6 in the side view. Then there is the larger opening, *G*, in the center of the box where the main stream enters. The box is partitioned crosswise and lengthwise, the two partitions crossing at the center of the main opening, and brought to a knife edge at that point, so as to

split the stream sharply, as indicated at 7. Directly over this crossed partition is placed a stationary funnel, 5, which concentrates the stream into the smallest possible compass, and as the machine makes its circuit each of the four sections receives the whole stream.

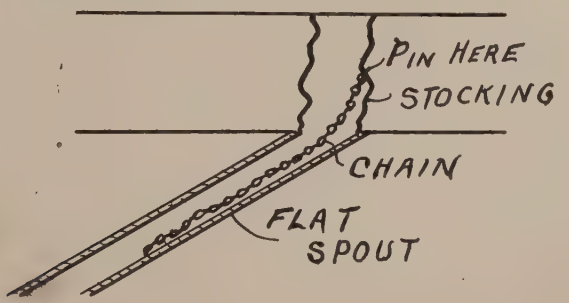
It is impossible to have anything but a perfect division of the



stream with this device, and it furthermore requires but one stocking, 3, in place of the four usually used, which is quite an item in itself.

TROUBLE WITH FLAT SPOUT

A good remedy for a flat spout that causes trouble is to take a light jack or sifter cloth chain and pass the chain up through the stocking about half the length of the stocking, pinning through from the outside with a safety pin. This allows the chain to hang down

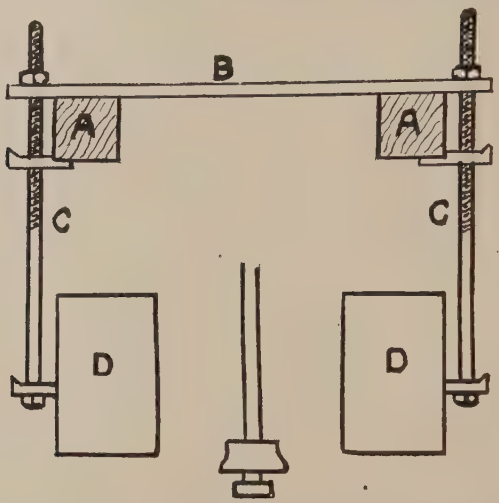


the spout about 12 inches. The motion of the sifter agitates the chain, giving an up-and-down and a side motion to it.

SETTING UP THE SIFTER

The following shows a good way to set up a sifter. Take four long bolts, each of them having one end threaded for about two feet. But two of these bolts are indicated in the diagram at *C*, but they are sufficient for a clear understanding of the method employed. Next place a 2x6 plank *B*, across the hanger timbers *A A*, and bore holes in the plank for the bolts as indicated.

Then put one bolt in each of the reed holders on the sieve boxes *D D*, with the threaded end up. This threaded end is run



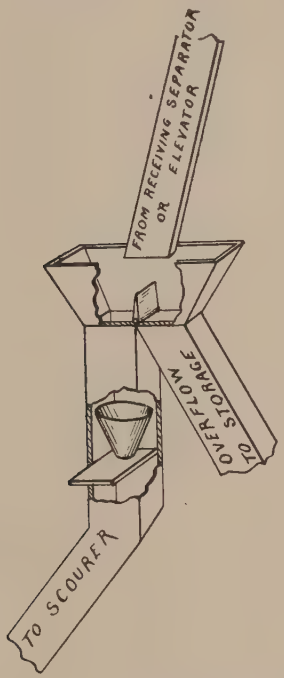
through the hole in the plank and the nut screwed on above. It is now possible to raise the sifter boxes as high as necessary, and at the same time keep them level throughout the operation. When they are high enough to connect up with the shaft they are held by this arrangement without danger of falling. When the setting up is finished the bolts can be taken out of the holders and the reeds put in.

CHAPTER XI

FEEDING

FEED REGULATOR FOR SCOURERS

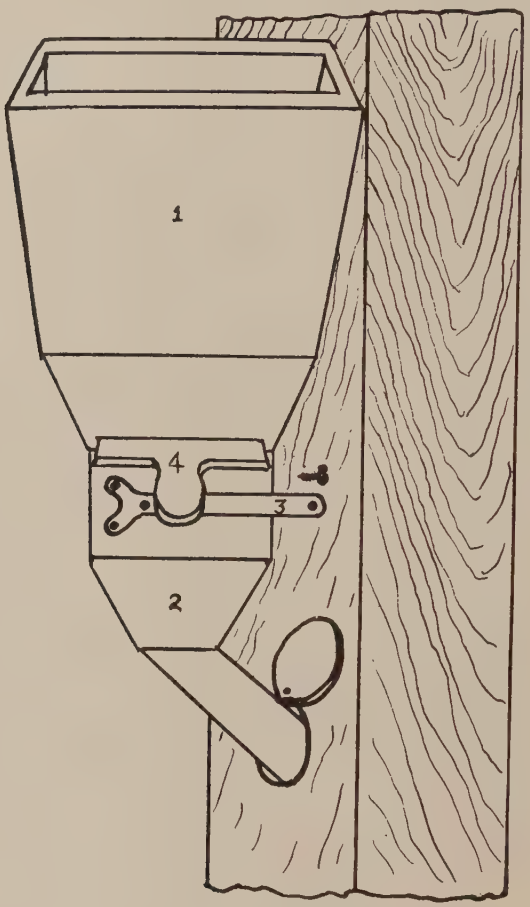
In cases where the receiving separator is of small size and screens with large openings have been put in to increase capacity to take care of a sudden rush, there is generally trouble in getting an even feed.



As a result short straws and sticks pass through the receiving separator and clog up the opening in the scourers, which cannot be very large on machines of small capacity. Invest 5 cents in a tin funnel, knock the spout end off, ream out the hole in the slide to the full capacity of the machines, open up the feed regulators on the scourers, and troubles with them will be over. The cut shows the manner of using the funnel in the spout.

A PORTABLE FEEDER

This little device is for feeding in stock after a choke-up. It may be attached to almost any slant of spout, elevator or conveyor. The hopper may be detached and used to carry with. In the sketch Fig. 1 is the hopper; 2 is the spout to go into hand hole or turned half around

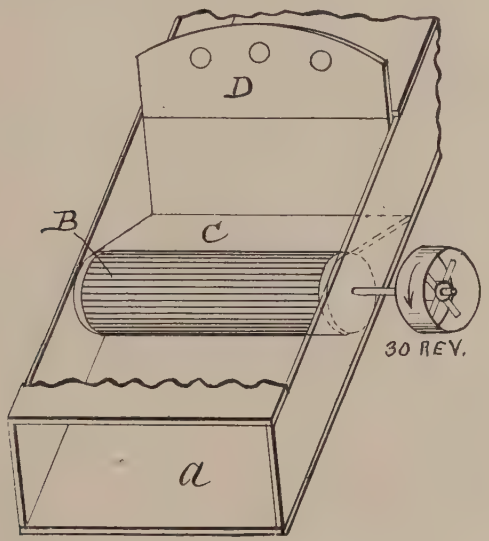


for elevator; 3 is bar to hold it in position by the use of thumbscrew; 4 is slide, used as bottom for hopper and to regulate feed. Part 1 should be used only for conveyors. It sets inside and may first be filled, which saves much work.

FEED ROLL FOR SMALL GRAIN

The accompanying drawing illustrates a feed roll for small grain in the rough from bins to conveyor or elevator.

The spout or trunk is indicated by *A*, and may be of any size; *B* is a 6-inch roll, with drive, corrugated 1 inch by 1 inch deep, solid ends, so that grain and rubbish cannot work past ends of roll. *C* is a 2-



inch strip, or cantboard, on bottom of trunk to prevent bottom of roll being submerged in grain. *D* is the cut-off, or slide, in main trunk 12 inches above the roll.

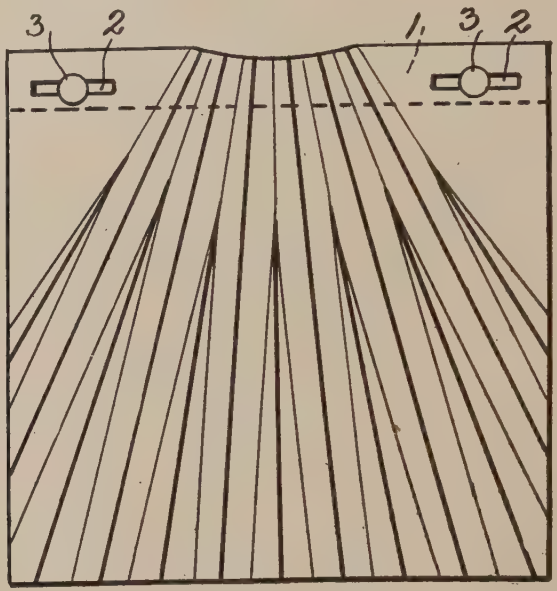
One or a dozen feeds can be arranged from one drive, provided trunks are in line, and as many different kinds of grain can be mixed. The speed of the roll should be such as will give the desired flow of wheat or grain with the gate raised on a level with the roll. This gives a large volume of grain for the roll to work on and anything that will pass under the gate will feed over the roll nicely.

In building new spouting or trunks for this purpose one can arrange a set-off in bottom of spout and do away with cantboard, *C*. This arrangement can be put in any kind of a spout provided one can get a drive to it. Then belt up, raise the gate and the roll will do the rest.

FEEDER FOR EVEN SPREADING

The accompanying sketch shows a feeder for rolls or anything that requires an even spreading of feed. Feeders of this type in connection with roll feeders will work well, especially on coarse stock.

The body of the feeder is substantially similar to a lady's folding fan. It can be made from light tin, wood or anything that can be bent or made to take the proper form. It can be made curved at top or

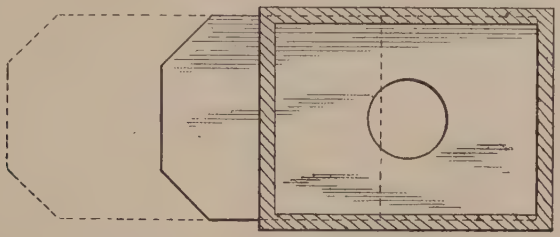


the strip made longer and turned to suit the feed. It is adjustable to almost all conditions that require a feeder. The corrugations can be increased in number until the spray of feed going to the roll is very fine and thin.

It will be seen from the cut that the longer the roll, the larger the feeder will have to be. In the cut, 1 is a strip, one by half an inch, to which the feeder is attached and which must be as long as the roll or as the hopper is wide. The figure 2 is the slot for the screw, 3, which works in the slot and by which it is attached. The slots permit of an adjustment either from one side or another by the screws.

FEEDING WHEAT TO FIRST BREAK

The accompanying sketch shows a cheap and simple device for feeding wheat into first break rolls in small mills. This device will feed clean wheat just as steadily and accurately as the sand will run through an hour glass.



The device consists of two sheet-iron slides, placed in a wood spout directly above the first break roll. The bottom slide has a round hole, sufficiently large to admit the desired amount of wheat. The top slide, indicated by dotted lines, is placed directly on top of the other, and is used for a shut-off.

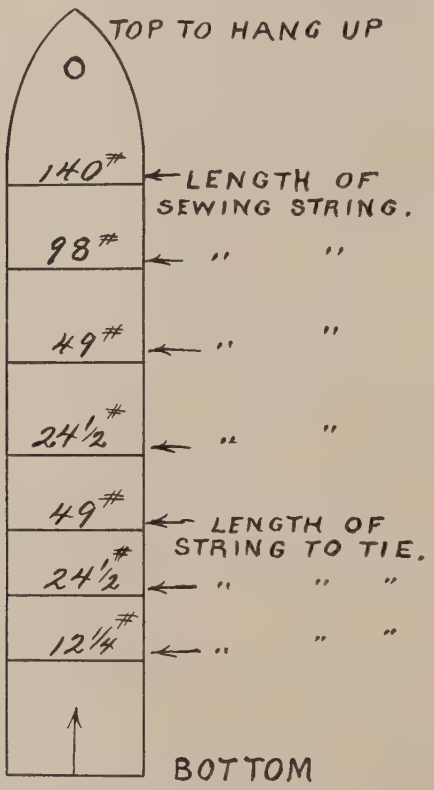
A 1-inch round hole in sheet iron will feed clean wheat for a 50-barrel mill.

CHAPTER XII

SACKS

STRING MEASURER

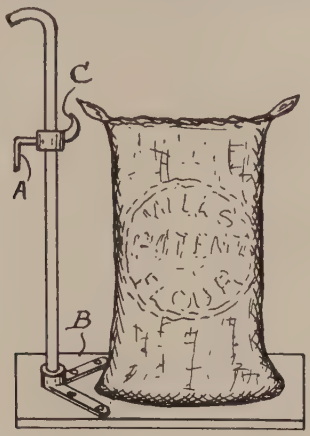
The sketch is for a measuring board which can be made of any soft wood, of any breadth desired, and long enough to measure the



longest string used about a mill. One can measure from top or bottom end, as desired. The length of string can be measured, as you are accustomed to using a certain length, and marked on board in plain figures, as the drawing will show without any further explanation. This should be kept hung up near a reel of twine and then there won't be any guesswork in cutting your next string.

TO HOLD SACKS WHILE SEWING

The illustration shows a handy holder to use when sewing sacks or bags. It consists of a table, *B*, with an upright round iron fastened



to it as shown. There is the hook, *C*, in sliding collar for long and short sacks, with set screw made with lever, *A*, to hold it in place. Just hook the sack onto *C* and it will be steadied while you sew it.

FILE FOR SECOND HAND PAPER SACKS

Every mill has use for second hand paper sacks, particularly one which has a large country custom trade and sells quantities of all

FIG. 1

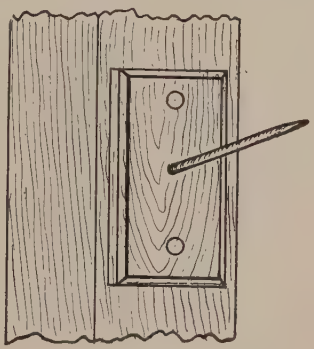


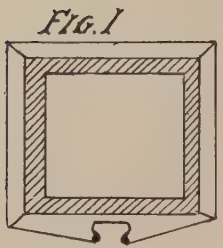
FIG. 2

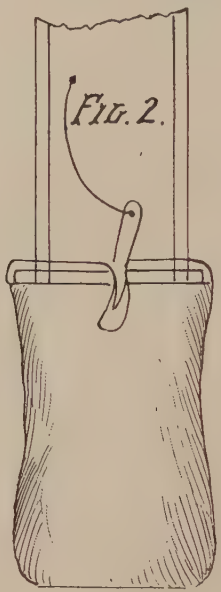
kinds of feed and chicken feed. It will be found very convenient to make a simple file or spindle for holding such bags. A piece of board ten by six inches and 7/8 of an inch thick is taken and three holes bored

with a gimlet, as shown in Figure 1. In the center hole is inserted a large spike nail which had been filed to a sharp point. Then the two other holes are used to screw the board to an elevator leg, or any place where the file will be handy for the miller.

BAG HOLDER FOR SPOUTS

The accompanying sketch shows a very convenient bag holder for spouts. Cleats are put on lower end of spout as shown in Fig. 1.





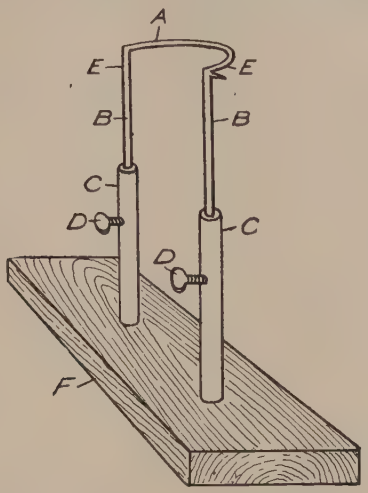
The cleat on front side has an oblong hole with notch cut in. When the bag is put on and drawn around the spout above the cleats and down through the notch it is firmly held in place with a tapering pin as shown in Fig. 2, and very readily detached.

SACK HOLDER

This very simple contrivance will frequently prove of practical benefit in the mill. With this sack holder in action one man can load up sacks by himself. A piece of iron or steel is bent as shown with two upright legs, *B, B,* prongs, either made or attached at *E, E,* and a half circle *A,* at the top.

Two pieces of gas pipe, *C, C,* are fastened in a two-inch board,

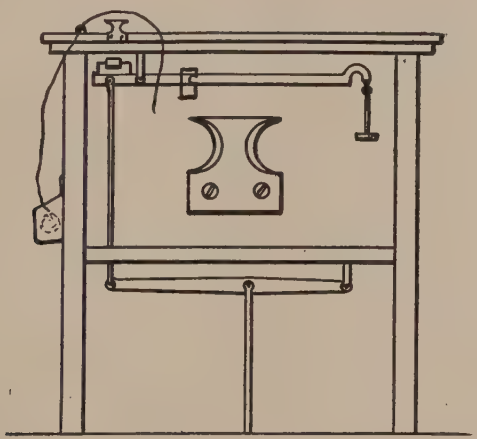
F. Then *BB* can be raised and lowered in *CC*, being held in place by the set screws, *D*, *D*. To operate, the top of the sack is doubled over



circle *A*, fastened to the prongs *EE*, and the whole adjusted by means of the set screws to the proper height.

MILLERS' HANDY KNIFE

A knife similar to the one shown in sketch, placed on the platform scales, is very convenient when tying grain bags. The twine can either



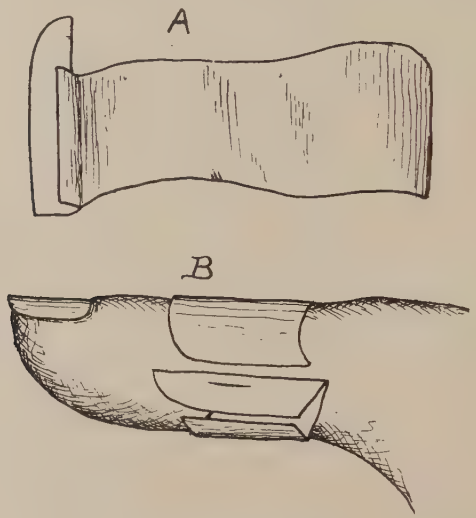
be placed above the knife or threaded through small staples to keep the end from falling down.

HANDY SACK KNIFE

Herewith is presented a novel idea in the shape of a handy sack knife. It only requires a piece of stiff tin and an old penknife blade to make it.

Take the tin and cut in shape as shown in sketch, to which solder the blade in position shown. Then bend the tin to fit the thumb. The knife is then in position for action, leaving both hands free to handle and crimp the paper or cotton sack as the case may be.

After you have passed the twine around the sack, using the mil-

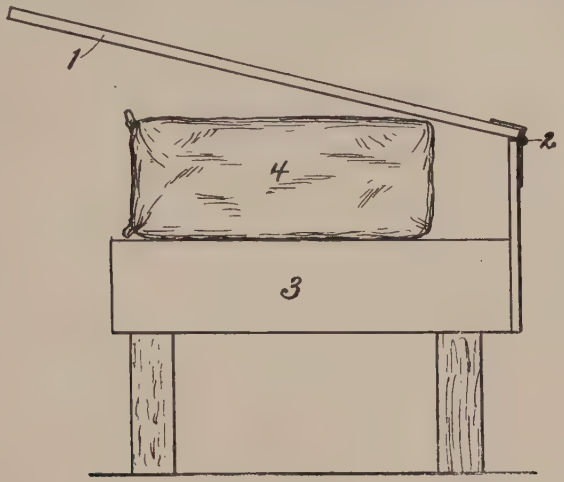


ler's knot or tie, grasp the top of sack with right hand. Then draw the twine as tight as you wish. Then raise the left hand, which throws the twine against the knife and the trick is done. After once becoming used to it you can tie sacks very rapidly and would not be without it.

SACK PRESS

A handy bag or sack press is shown in the accompanying drawing. It consists of a bench or table which should be fastened to the floor. This bench should have a back about as high as a sack of flour is thick when compressed. One end of a lid or pressing board is hinged to the back board.

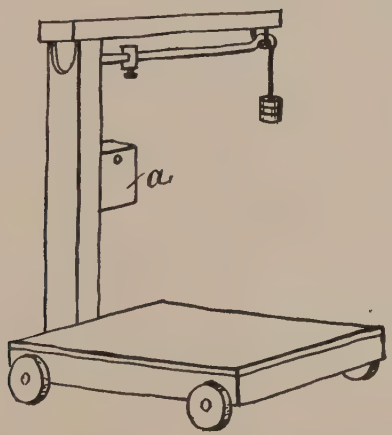
In using this presser a bag of flour is placed on the bench in any position desired, the lid lowered and the desired pressure given. This



homemade press makes a sack of flour look very much better and adds to the appearance when piled up in a mill.

TYING THE SACKS

The annexed sketch will explain a convenience in tying sacks. It shows a scale such as is used for balancing when flour is put up in

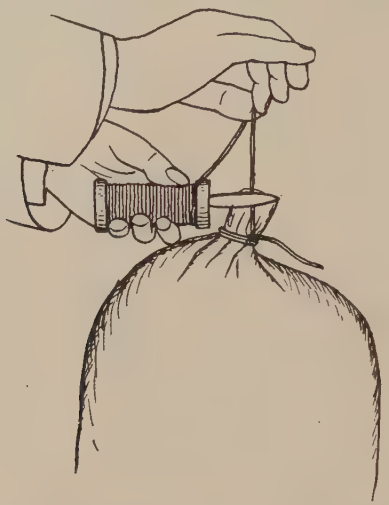


quarter and eighth paper sacks. The wrinkle is the twine box marked *a*. Three balls of four-ply jute twine are tied together and put into the box, which is screwed upon the post of the scale so that it is

under the beam. The end of the twine comes out at the back of the box and is guided by screw eyes so that the twine hangs on the left-hand side, standing in front of the scale. There is always twine with the scale, wherever the latter may be. Tie the sacks before the twine is cut.

SPOOL AND TWINE FOR TYING SACKS

The device shown in the accompanying sketch has the peculiarity both of economy and speed; the spool, which contains the string, is also the handle of the knife and the string being wound around it,



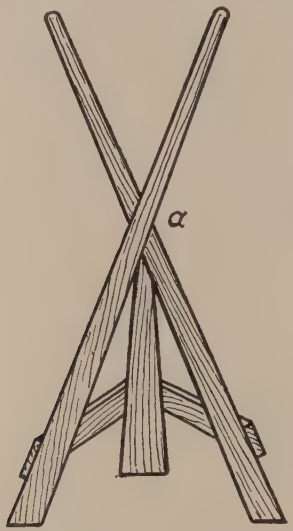
making a leverage on the string so that when the knot is tied it will not slip off. Neither will the flour leak out.

In cutting the string, you can cut it close to sack and save string. In winding the spool, there is a handle to slip it into and hold it against the belt that drives the packer and winds it like the bobbin on a sewing machine.

HANDY BAG TURNER

This contrivance consists of two strips about 2¼x⅞ inches and about five feet long mortised into each other at *a*. A third leg runs down from *a* and two braces are attached near the bottom. To hold the device firm a weight can be laid across the braces or the legs themselves fastened to the floor.

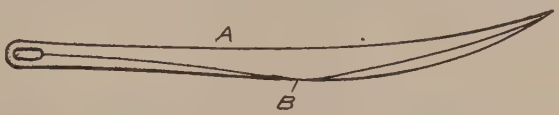
The bag is held in front of the contrivance, open end up, with one hand on each side of the top. One side of the bag is turned over the top points of the turner, pulled down, and the bag is turned. With five minutes' practice a person can easily turn bags twice as fast as



by hand. One thing is essential. The top points of the turner must be the proper distance apart so that the bags strip over easily, and the corners will turn out.

COMBINATION SACK NEEDLE AND TWINE CUTTER

This will be found to be the handiest tool in the mill, as it saves



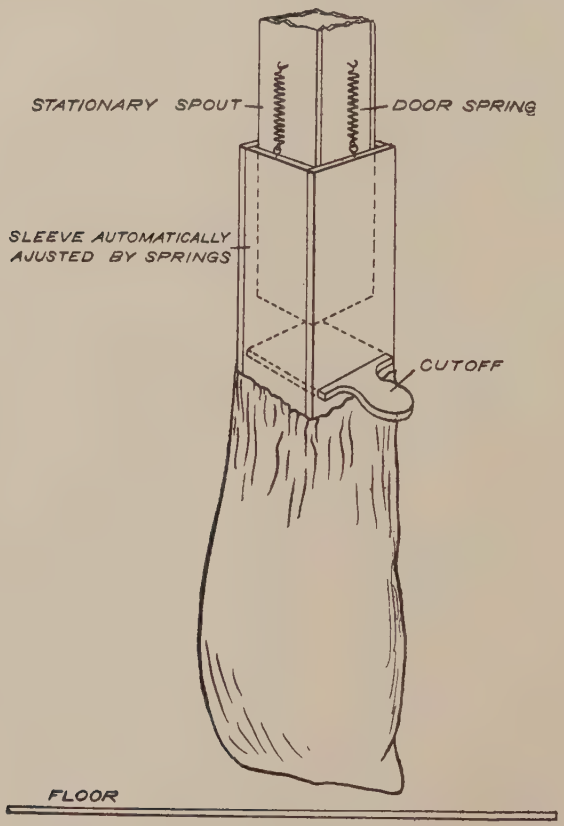
more time than anything else about the premises. Simply sharpen one side of the needle near the point. This cuts the twine.

CHAPTER XIII

FILLING AND PACKING

SACKING SPOUT

The accompanying sketch shows a sacking spout, which has an attachment that is easy to make and needs no explanation.

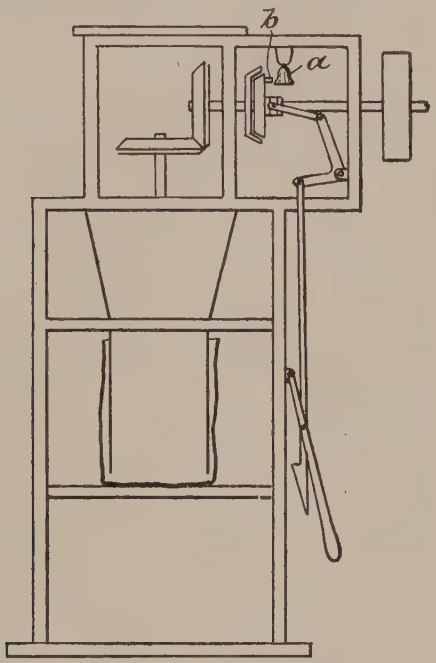


The advantages are: (1) The sack swings clear until several pounds of material have run in, causing the sack to fill nicely. (2) When the operator pulls down the movable spout slightly, the sack releases without tearing. Common hooks may be used to hold the

sack. Use two to four springs, depending on the size of spout; each from 15 to 18 inches long.

BRAN PACKER ALARM

The sketch below is self-explanatory. Letter *a* shows a bell and letter *b* a set screw in friction clutch. When the packer is in



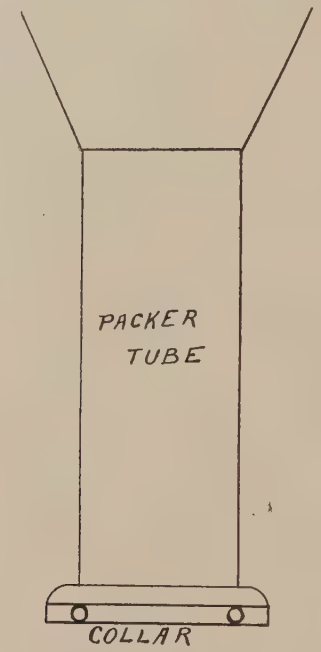
operation the bell is quiet. When the bran bag is full, the clutch is disengaged, allowing the projection *b* to engage the bell, thereby warning the operator that the bag is full. As bran packs slowly, the operator may attend to other work until the automatic alarm tells him that the packer requires attention.

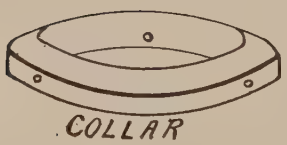
ATTACHMENT FOR PACKER TUBE

The device shown herewith is an attachment for a packer tube so that different-sized sacks can be filled without changing tubes. It is simple to make, is easily and quickly changed and costs only a trifle.

To make the attachment take a piece of good sound plank 1½ or

2 inches thick and 14 inches square; with a pair of dividers draw a circle in center of plank, the size of the lower end of packer tube; draw another 1½ inches larger than the first one and saw out as marked. Take the piece to a blacksmith and have him put on a band





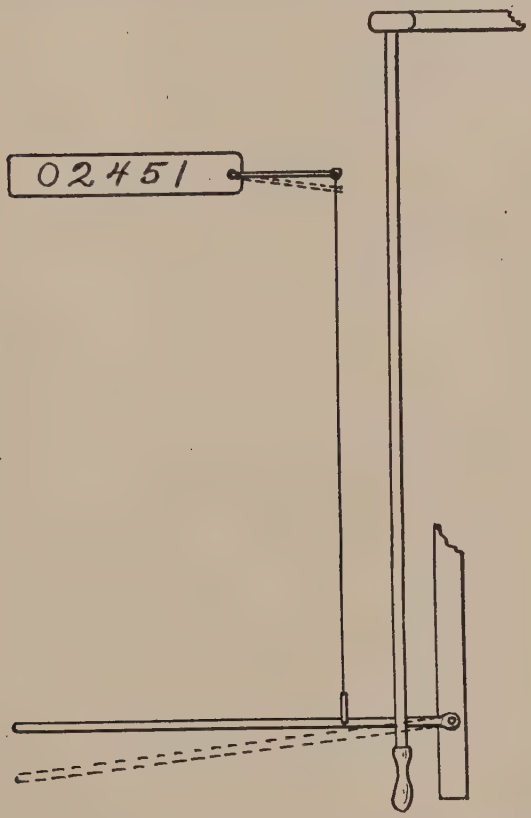
of ⅞x3-16-inch iron, to prevent splitting. Have the band placed even with the lower side and round off the upper edge. Drill three ⅛-inch holes through band and wood equal distances apart, placing 2-inch buggy tire bolts through these holes.

Now you have a neat collar to fit your 48-inch packer tube. Drill three holes through bottom of tube, to match holes in collar; slip collar over tube and fasten with nuts on the inside, after which you are ready for business.

For packing different sizes of sacks different-sized collars can be used; for 100-pound sacks a 13-inch collar, and for 140-pound sacks a 14-inch collar, outside diameter.

IMPROVED METHOD OF KEEPING TALLY

The cut shows a counter operated by lever of packer. The lever is shown to the right and a wire runs to counter to operate it. This



is an improvement over the platform operating counter, because it cannot be operated while the mill is idle, or any errors be made by operator. It is automatic and absolutely correct.

By the use of this method of keeping tally on flour and feed packers, the miller can render report of yield every 24 hours, or as

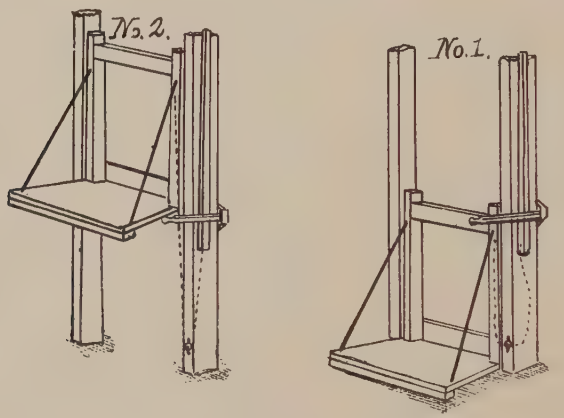
often as desired. Suppose the counter reads 02451, as shown in the cut. The packer takes the figures off counter on changing size of package, as follows:

	02451	Barrels.
Packing eights (paper)	03201 = 750 =	93¾
Packing quarters (paper)	03605 = 404 =	101
Packing barrels (wood)	03802 = 197 =	197
		391¾

This would amount to 76,783 pounds. Looking at the feed packers, we find, say, 25,806 pounds bran and shorts. This makes a total of 102,589 pounds output, or a yield of about 4:30.

FLOUR PACKER ATTACHMENT

The sketch shows a method for throwing flour packer in gear which will enable one to pack from 15 to 20 more sacks per hour



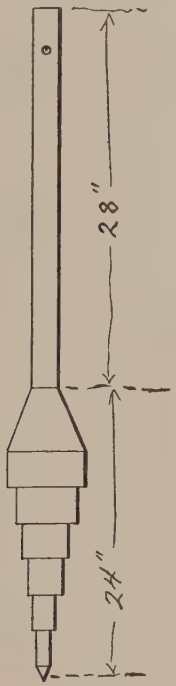
than can be done by throwing the machine by hand. Put a small pulley on the lower part of the packer leg and run a whang leather cord through the pulley and fasten to the chair, so that when the chair goes up it pulls the machine in gear.

In Fig. 1 is shown the chair down; in Fig. 2 the chair is up and the packer is in gear. This can be attached to any packer and will save the operator a great many moves, as all he has to do is to put

the sacks on the packer, when the machine needs no further attention until the sack is ready to be weighed.

SACK RAMMER

The sketch shows a device for pressing sacks tight and full, to hold more feed or flour than if filled by hand. It is made tapering, with shoulders turned in. Neither its construction nor way of op-



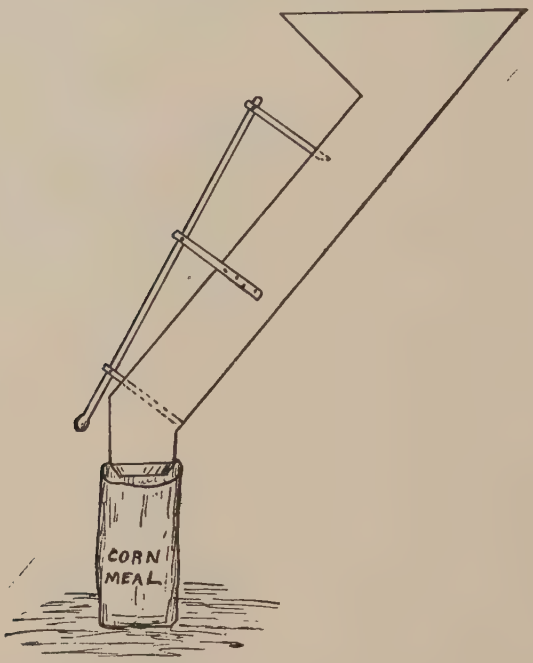
erating requires any explanation further than that supplied by the sketch.

CONVENIENT SPOUT FOR SACKING MEAL

A convenient spout for sacking corn meal, chop, screenings, buckwheat flour, or any coarse material, and one which, when properly constructed, is quite accurate, may be made as follows:

Any ordinary spout may be used. Find required measurement

of material which is to be sacked, at weight desired. Allow an equal cubic space between upper and lower slides, same to be pivoted in center, so that when either slide is closed the other will not leave slot



in spout. By placing handle at a point midway, it will be seen that both slides will be open.

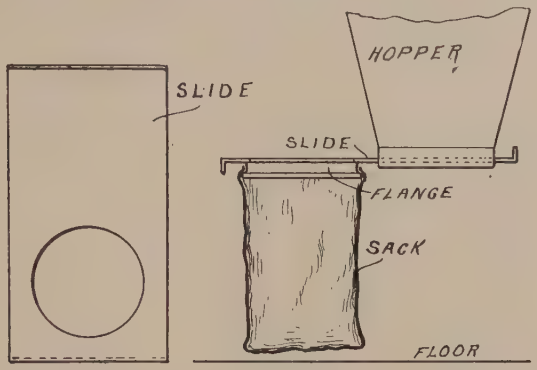
SPECIAL SLIDE FOR RAPID SACKING

This slide can be used on a bin or large spout and is a great help in the rapid handling of bran, shorts, rolled barley or any other light material. The slide, shown in the accompanying sketch, is placed in the bin or spout at a height such that the attached sack will hang clear of the floor. The slide can be made of galvanized iron, or, if desired, a light casting, with guides for it to run in, might be procured.

Extending downwards from the circular hole at one side of the slide is a flange about 3 inches deep. The circular opening should

measure about 12 inches across. No hooks are necessary on this flange; a firm hold is all that is required to keep the sack in place.

To operate, hang sack about flange, grasp firmly with the right hand and push slide in with both hands, bringing the hole in the slide



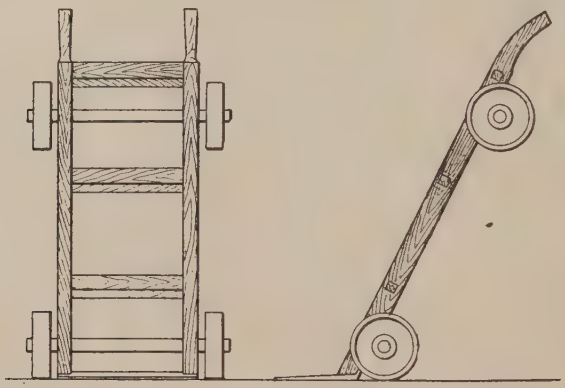
directly under the bin outlet. When the sack is full pull back the slide and the solid half of it comes under the opening and shuts off the stream.

CHAPTER XIV

TRUCKS AND SCALES

FOUR-WHEELED HAND TRUCK

Every mill and warehouse has a hand truck of some make and also mill or warehouse trucks, and mills having a wholesale as well as retail trade frequently find themselves short of a truck when some grocer calls at the mill for a barrel of flour. The mill truck is loaded,



and if the order is placed on an ordinary hand truck the paper sacks are liable to slip off and become torn.

The ordinary hand truck can be converted into a mill truck by placing another set of wheels near the handle, as shown in the sketch. This will give one a handy light mill truck and makes a combination for handling the retail as well as the wholesale trade.

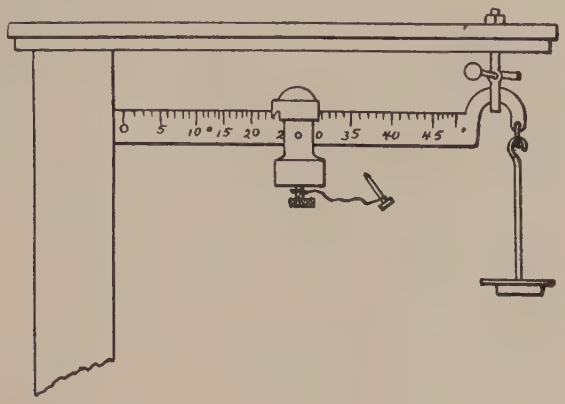
TO INSURE CORRECT MILL WEIGHTS

To avoid mistakes in setting scales, and to prevent moving of the poise after being set, the accompanying device should be used.

First, place the poise on beam at the number of pounds you wish to put in the sacks. If for 1-16 barrel, place at 12¼ pounds, then fasten so that it will not move while you drill a 3-32-inch hole

through the poise and beam. Then move for ⅛-barrel sacks to 24½ pounds, and drill through beam by using the same hole in poise. The same way for ¼ barrels, at 49 pounds.

Then take a small wire nail that will fit the hole and tie with string to poise, as shown in sketch. Now move the poise to 0, and



balance scale. Then if you want to pack out ⅛ barrels, just move the poise to the second hole in beam and push the nail through. You will not need to look to see if it is at 24½ pounds (and not 23½, as it is frequently found) and you may be sure it will say there. Then for ¼-barrel, move to the third hole, and for 1-16-barrel, use the first hole.

Having but three holes in beam and they so far apart, you cannot make a mistake in setting scales. In using the scales for other weights, always let the nail hang to the poise.

RENUMBERING SCALES

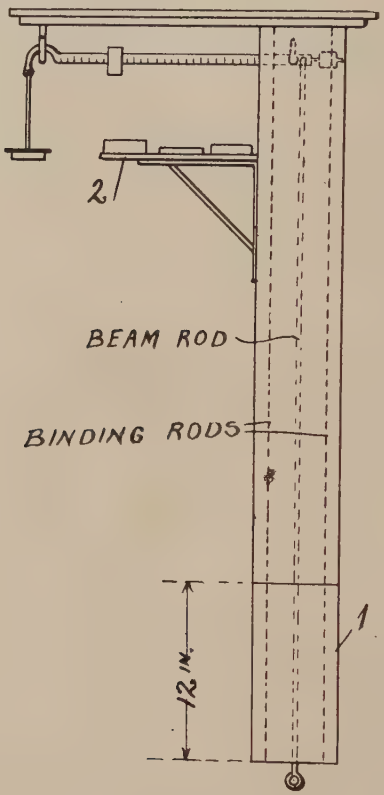
Every mill contains a number of scales and in time the figures become invisible by reason of smoke, dust and other substances coming in contact with same, also through the action of the atmosphere. You

can always have nice visible white figures on your scales without employing an expert painter to renumber them, simply by taking a piece

of common white chalk and rubbing it over the numbers on the beam. You can make your one-half-pound marks blue and the pound marks white by employing chalk of those colors.

IMPROVEMENT ON MILL SCALE

The sketch shown herewith practically explains itself. It represents a common scale rod box, the "wrinkle" applied to same being



shown as follows: Fig. 1 represents a 12-inch extension of the beam rod box, made same size as the box and fitted to the lower end. The object is to bring the beam up to a level with the ordinary person's eyes and hand without stooping. The advantage is apparent and will save many a crook of the back.

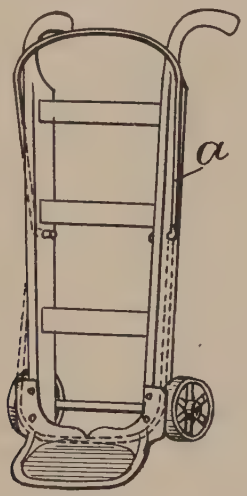
To put on this extension the beam rod and binding rods, as noted

in the sketch, must of course, be lengthened to exactly the same length as the extension. Any blacksmith can do this work at a cost of a few cents. The extra weight of the lengthened beam rod can be counterbalanced with shot in the shot receptacle on the pee, or by means of the regular balance ball.

Fig. 2 represents an ordinary wooden bracket shelf, about 12 inches long and the same width as the rod box, to be fastened to it on a level with the pee, to lay the loose weights on, instead of putting them on the rack usually provided for them. The 12-inch length will accommodate three or four weights without piling one on the other, leaving the figures in plain sight, and the weights ordinarily used ready to hand.

ATTACHMENT FOR BAG TRUCK

The sketch shows a little attachment which will be found useful in most mills. It is designed to be placed on a bag truck so that two bags may be carted at a time, if desired. A yoke is attached to the



truck, made of ⅜ round iron and is turned down over the two bags as shown by the dotted lines, to clasp them together when pulling the truck back. When the yoke is not in use, it can be turned up out of the way.

CHAPTER XV

SAMPLING AND TESTING

FLOUR SAMPLER

The device shown is a sampling tube which may be attached to any size or shape of flour bin or to an ordinary spout. It consists of a metal tube pivoted on a block of wood attached to the top of the bin or spout, and all that is required to adapt the device to any

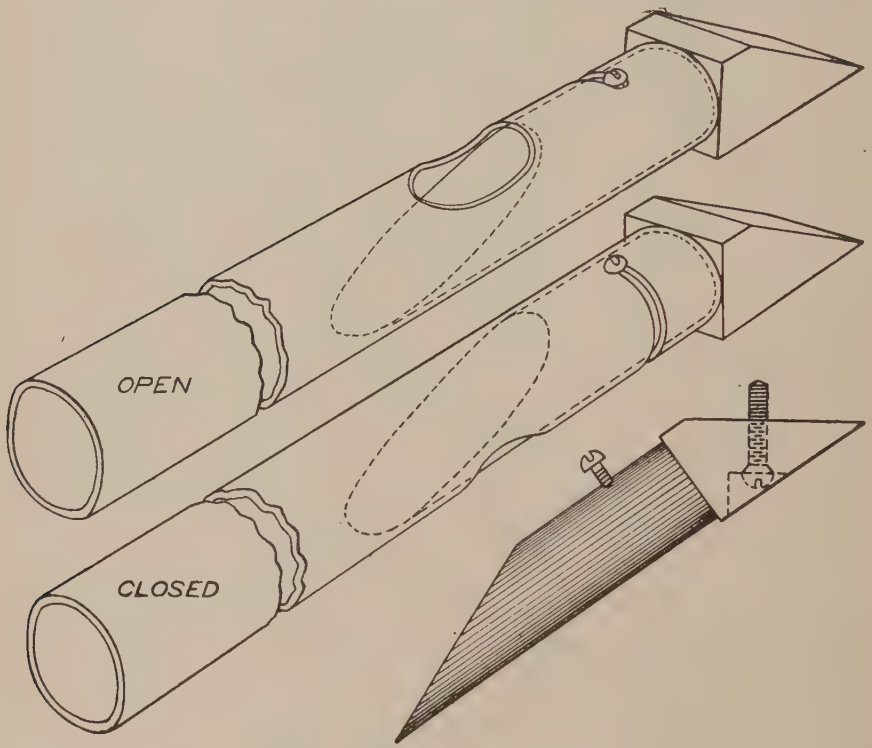


FIGURE 1.

sized bin is to make the tube and wood stock longer and see that the oval slot is directly under the flowing stream of flour, no matter from what direction it falls into the bin.

Figure 1 shows the sampler open and closed and the wooden

block, or stock, on which it is suspended. Use nickel-plated brass tubing 1¼ inches in diameter. The slot to catch the flour is 1x1⅝ inches, and the round part of the stock that extends down into the sampling tube is beveled at the point where it comes opposite the slot, as indicated in the drawings. At the point where the tube is attached to the wood stock there is a slit extending half way around the tube, which is held in place by, and turns on, a round-headed screw.

Figure 2 shows the sampler in place in the flour bin. It will be seen that the oval slot comes directly below the flour spout. When it is desired to take a sample of flour the tube is turned until the slot

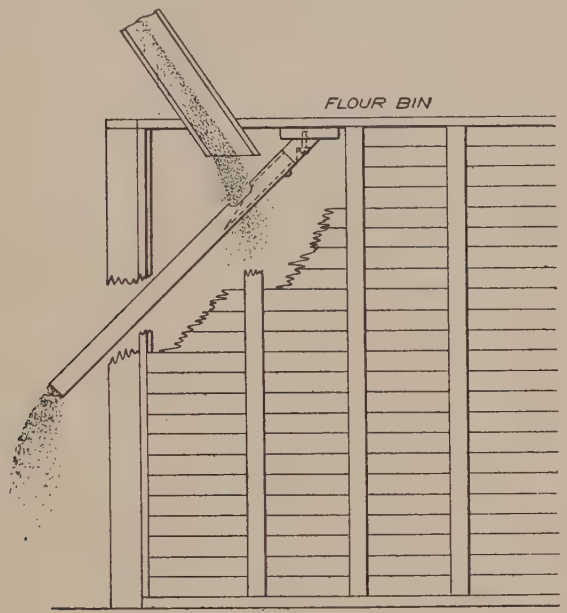


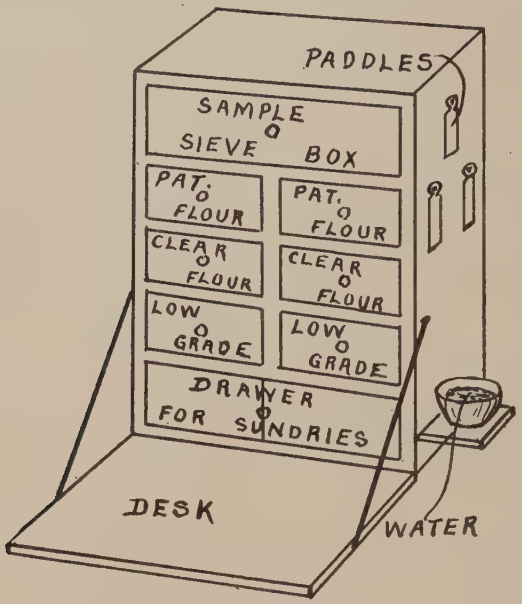
FIGURE 2.

is uppermost, and when the desired amount has been secured, a turn of the wrist closes the sampler. A piece of leather 6 inches square, with an oval hole, fits over the tube where it comes out of the bin and makes the arrangement dust tight.

FLOUR SAMPLE CUPBOARD

The drawing shows a flour sample wall cupboard and desk for millers who run their flour by sample. The cupboard is designed to be fastened to the wall and is made with a drop door, so that it can

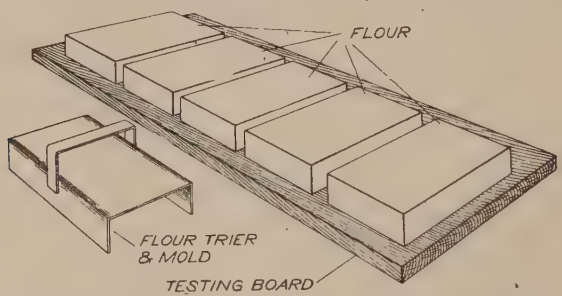
be used as a desk, with basin at side for water and paddles or slicks for sampling flour. It can be made any size desired. It is convenient



to use the top space for sample sieve box, the six drawers for flour samples and the bottom drawer for sundries.

FLOUR TRIER AND MOLD

Here is a "wrinkle" consisting of a flour trier and mold and a testing board upon which are five nicely-molded bricks of flour.

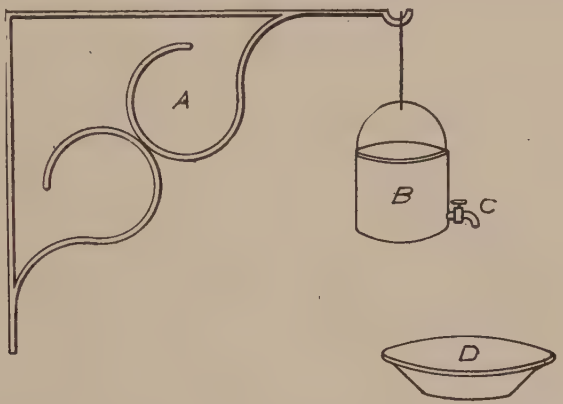


Take a piece of smooth metal, say 5 inches wide and 4 inches long, and bend the two long sides down straight about 1 inch on the sides. This will make a mold 4 inches long and 3 inches wide.

Place a handful of flour on the testing board and press the mold across the flour. This will leave a nice, smooth brick. Then take the mold and cut off the ends of sample. Do the same with other samples. This will give one samples of a uniform size and of the same solidity for testing by the wetting test or for comparison in the dry. The operator can place the bricks as close together as he chooses and can have evenly molded bricks of the same length, width and thickness.

GLUTEN WASHER

The accompanying illustration shows a device used in washing gluten. *A* is an iron bracket with hook at outer end. *B* is a small pail large enough to hold sufficient water to wash the amount of dough,



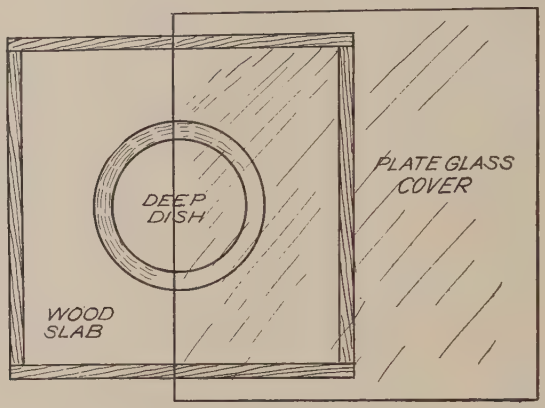
usually 30 grams of flour. *C* is a faucet and *D* is a pan to catch water and washed-out starch.

By letting the water drop slowly on the dough none of the gluten will be washed away as when a steady stream is used. By letting the dough stand from 30 to 40 minutes in water before washing one is able more easily to wash out the gluten, and with this device to save the starch by letting water stand in pan, *D*, until starch settles to bottom. After a little practice one should be able to wash out 30 grams of flour with one quart of water or less.

TESTING DISH

Here is a handy and satisfactory arrangement of a flour testing dish for the miller. Take a slab of wood a little thicker than the dish

you intend to use, bore out the center with an extension bit such as is used in making hand holes in spouts and insert the dish in it.



Then procure a piece of ordinary plate window glass to serve as a cover for the dish. The glass will keep the mill dust out and insure cleanliness in the dough, while the block of wood will relieve the dish from the jar of the mill.

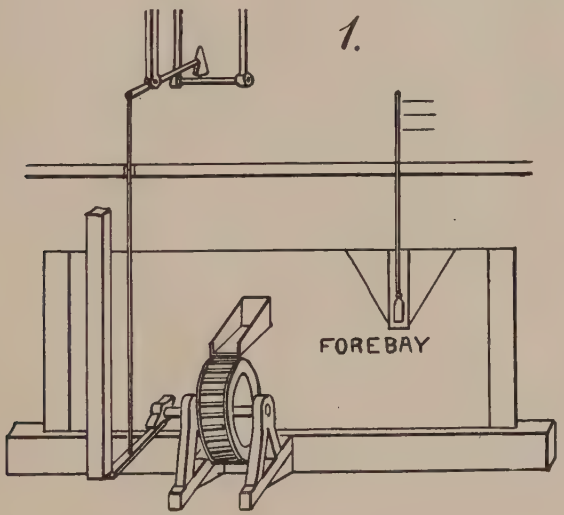
CHAPTER XVI

WATER POWER

WATER ALARM AND INDICATOR

The accompanying sketches show convenient devices for those using water wheels. They will spare a miller many steps.

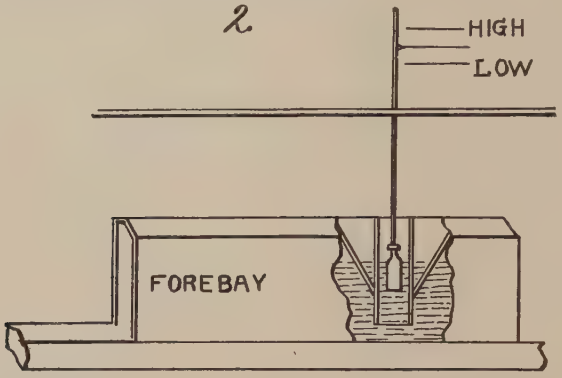
The arrangement shown in the first drawing is intended to be used at times when water is scarce to alarm the miller when it is liable to run over and waste. A toy water wheel is placed beside the



forebay in the manner shown, being connected by a cord with a hammer arranged on the ceiling of the first floor of the mill together with an alarm. A spout at the same level as the overshot leads water from the forebay to this small wheel. When the water in the dam runs over, the small wheel will be made to revolve, thus causing the hammer to strike on a piece of steel or bell in the mill.

Drawing No. 2 is a device for measuring water. It is made as follows: At the end of a slender rod fasten a bottle and put it in a tube fastened in a perpendicular position and open at each end in the

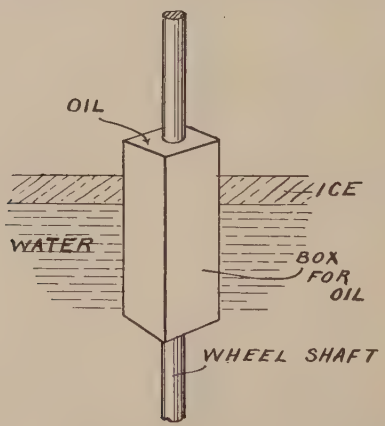
forebay. The rod is extended through the floor of the mill. Marks can be made indicating high and low water, when there is power enough to use two runs of stones, and so on, as desired. The bottle



in the forebay will rise and sink with the rising and sinking of the water, thus making it a most reliable indicator.

KEEPING ICE FROM WHEEL SHAFTS

Many a poor miller knows what it is to have to get outside at 6 a. m., with the temperature below zero, and chop ice before he can get his wheel gates open or his wheel to revolve. Such millers will



appreciate this simple device for preventing ice from forming around turbine shaft and gate rods.

Put a box or case around the shaft, slightly larger inside than the diameter of shaft and about three feet long. Fasten this box so as to

leave about one foot of it above water and the balance below. Pour in sufficient oil to fill the box down below the freezing point. As the oil will not freeze and can not get away from around the shaft, there will be no more trouble with frozen shafts.

PROTECTING DAMS IN WINTER

The injury done to dams by the expansion of ice formed on the surface of the pond is more than many water power owners have any idea of. The force is irresistible and unless the dam is protected by projecting points of land a short distance above, something has to go. This is one reason why so many dams go out during the spring freshet. The dam is pushed down stream a little by the expansion

of the ice, leaks are started and it only needs the additional pressure of high water to destroy the entire structure.

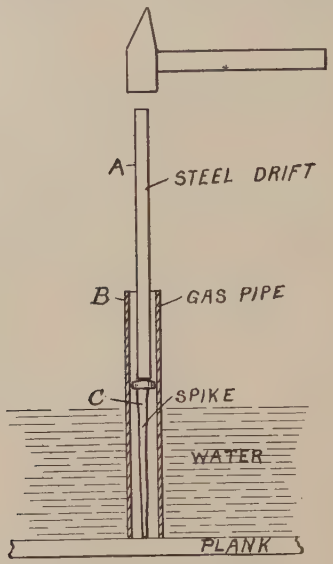
The remedy is simple and inexpensive. As soon as the ice forms, cut a channel about twenty inches wide clear across the pond and about six feet above the crest of the dam. Keep this channel open by cutting it out every morning until the ice is thick enough to hold up a team of horses, then cover the channel with coarse manure to the depth of four feet. Referring to the cut, *A* represents the dam, *B* the water, *C* the ice, *D* the open channel with the covering of manure.

DRIVING SPIKES UNDER WATER

The sketch shows how to drive spikes or nails under water. *A* shows steel drift; *B*, gas pipe; *C*, spike inside of gas pipe. The length of pipe depends on the depth of the water and should be of a diameter sufficient to allow the spikes to be driven, to drop in, but not so large

but that they will stand straight in pipe. The drift should be long enough to drive the spike down and leave a hand-hold above the pipe sufficient to hammer on.

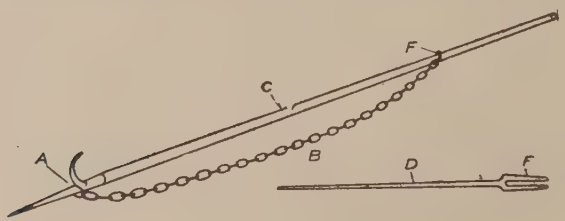
By this device spikes can be driven in several feet of water at any



angle desired, as the spike will go at whatever angle the gas pipe is held. This is a great help in building forebays, pits and bottoms for foundations.

DEVICE FOR WORK ON DAMS

The tool illustrated herewith will come in handy and make work easier when piling planks from sluices on mill dams when water is

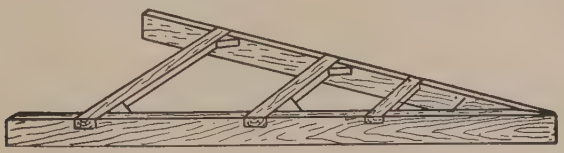


high or there are freshets in the spring. It consists of a common boat-hook with a chain attached. The latter should be as light as pos-

sible, but strong enough to stand the strain it will receive, say 5-16-inch chain. As indicated, *A* is the boat-hook, *B*, chain, with large link stripped over hook. Take up slack by ring *F*, on pole, *C*. The latter can be any length wanted. Bar *D* has a crab-claw, *E*, to catch into links of chain and bear on fulcrum under bar when using.

CLEANING MUD OUT OF MILL RACE

A good plan for cleaning out mud in the head or tail race of a mill is to take two planks 2x12 inches and twelve or sixteen feet long, and make a V-frame as shown in the cut. Face the two ends of the plank together, putting in cross joists of 2x4 stuff and nailing the pointed ends solidly together. Put this V in the race with the pointed end down stream and have a man on each of the upper corners and



one on the lower point. Then let a current of water through the race. The water will back up inside the V and cut the mud out from under it. As fast as the mud is cleaned out have the men move the V down stream to another point. With this device three men can clean out more mud than twenty can with shovels. All that is necessary is for them to tend to business and hold the V down in the race.

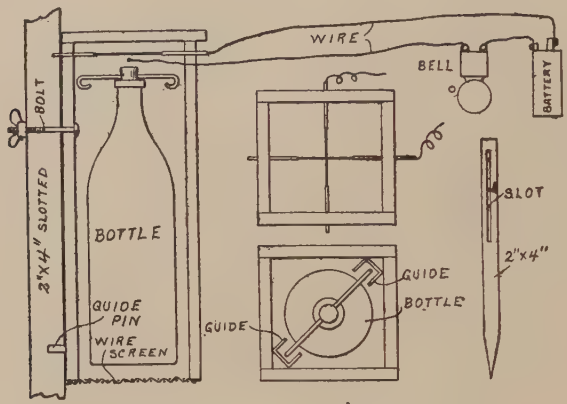
ALARM FOR MILL DAM

How many times has the country miller run out in the middle of the night, in the midst of a heavy rain, to look after his dam? Here is something which will eliminate the worry, let him sleep better nights, and may be the means of saving the dam from destruction and possibly the owner himself from failure. This alarm hardly needs any explanation, and its cost is very small.

Take an old spout measuring 4x4 inches inside and cut off a six-

teen-inch length. One inch from the top bore four small holes a trifle larger than the insulated wire to be used. The insulation is scraped off the wire at the points where it would cross, as indicated in the sketch, and the wire put in, drawn tight and wedged in at the holes.

Then the lower wire is put in a little slack, and below the first wire, being fixed so as to push downward, away from the upper wire. Next take two pieces of sheet tin as long as the spout and two inches



wide and place them at two opposite corners of the spout as shown, fastening each end, so as to make a smooth surface for the guide on the bottle to travel in.

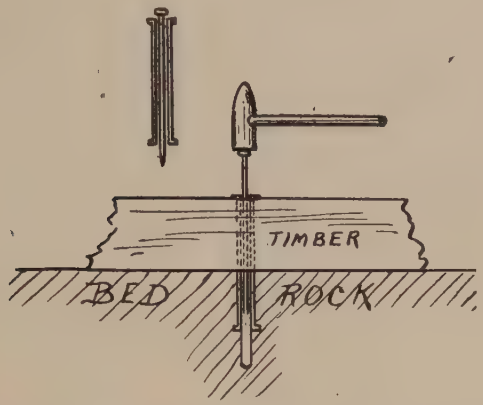
The guide itself is made by running a stout wire through the cork and curving each end, allowing about one-quarter of an inch play at each end so that it would have free travel. To the bottom of the spout nail a wire screen, to keep trash away from it.

To hold the spout and bottle a 2x4 is used, being slotted to receive the bolt from the spout as indicated. In this manner the spout can be adjusted on the 2x4 so that the bell will ring when the water reaches the height for which the alarm is set. The 2x4 holding the alarm is driven into the water at the most convenient point near the house. A cover which can be removed is also made for the spout to prevent any damage from above.

Then when the water rises the bottle rises along with it and pushes the lower wire against the upper one, making a contact and ringing the bell. It is a good plan to test the apparatus every evening.

SECURING DAM TIMBERS

The annexed drawing, which needs no explanation, shows how dam and other timbers can be easily and cheaply fastened to bed rock



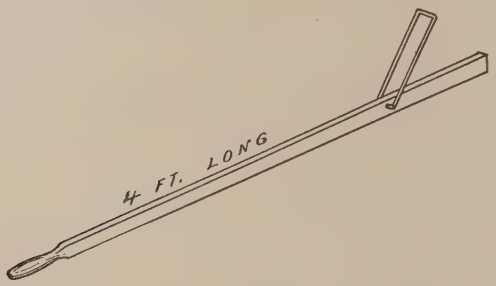
of streams. Timbers fastened in this way have great staying qualities. Any blacksmith can furnish the fastenings.

CHAPTER XVII

MILL TOOLS AND APPLIANCES

TOOL FOR SPROCKET WHEELS

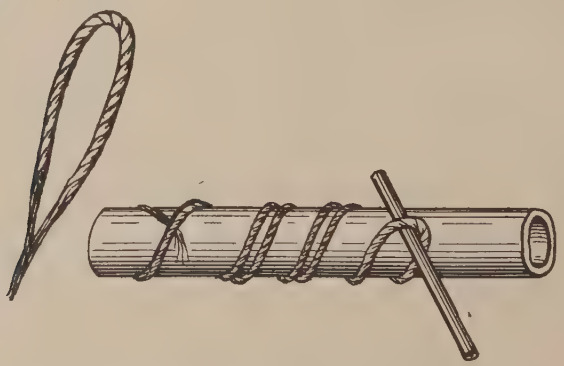
The sketch shows a handy tool which is for use on sprocket or chain wheels when turning bolts in order to examine cloths, or in



putting on cloths, or for similar purposes. The tool is simply a lever 3 or 4 feet long, with a wire link as shown. The link is of suitable length, according to size of sprocket wheel. It saves lots of muscle and keeps the hands or gloves from getting daubed with grease and oil.

SUBSTITUTE FOR PIPE WRENCH

The device shown in the accompanying sketch is a good substitute

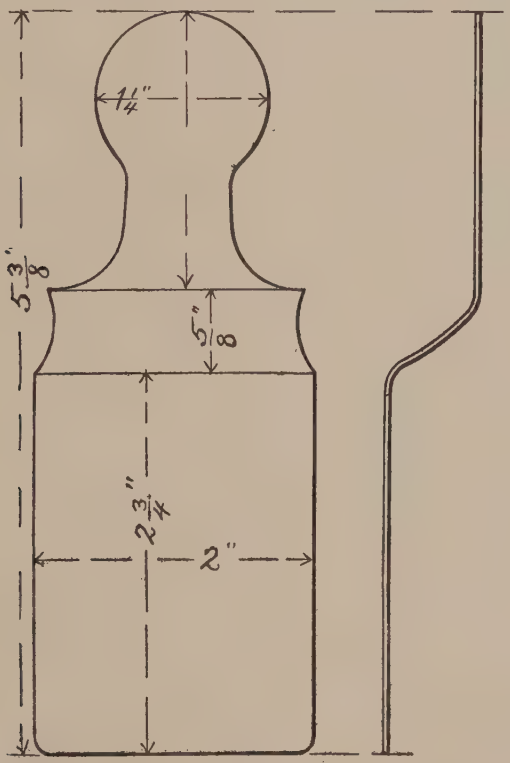


for a pipe wrench. Take three or four feet of new rope. Fray out both ends thin and put them together. Commence with tip ends and

wrap tightly around the pipe until you have a loop for a piece of pipe or round bar for a lever.

USEFUL HOME-MADE FLOUR SLICK

The accompanying sketch shows a flour slick that is more convenient to use and to carry in one's pocket than a straight one, as it will not fall out of the pocket, the common failing of all flour triers.



Take any ordinary piece of sheet steel and fashion it into the size and shape you want your slick to be. The dimensions of one are given in the sketch. Then polish with very fine emery cloth secured to a rapidly revolving shaft, if you have nothing better at hand for the purpose. Then put the slick into a vise and bend it as the sketch indicates.

AN ALL-AROUND TOOL

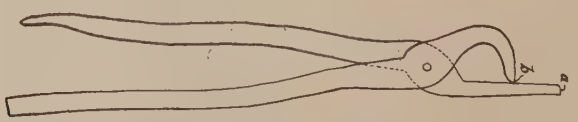
The accompanying cut shows a handy little tool that can be used to considerable advantage, and is convenient for carrying in the pocket. To make it, get a piece of flat steel (a piece of heavy saw blade will

do if you can get nothing better), draw a diagram on the steel and put in a vise, leaving the lines just below the edge of the vise jaws. You can then cut it with a chisel to nearly the required shape, and can finish on a grindstone. Polish the sides on the stone and finish the polishing on the face of a very swift running pulley. Moisten the steel while polishing. You will then have a flour trier with string cutter and screw driver combined.

The tool should be about 1¾ inches wide by about 3 inches to the point where it begins to narrow. The total length should be about 5 inches. Sharpen the part marked *A*. The hollow will prevent the sharp edge from doing you damage when not in use. *B* can be used for a screw driver, and if you get strong metal and leave it as strong as possible, and still have it small enough to reach a screw head, you can draw almost any screw.

BOLTING CLOTH PINCHERS

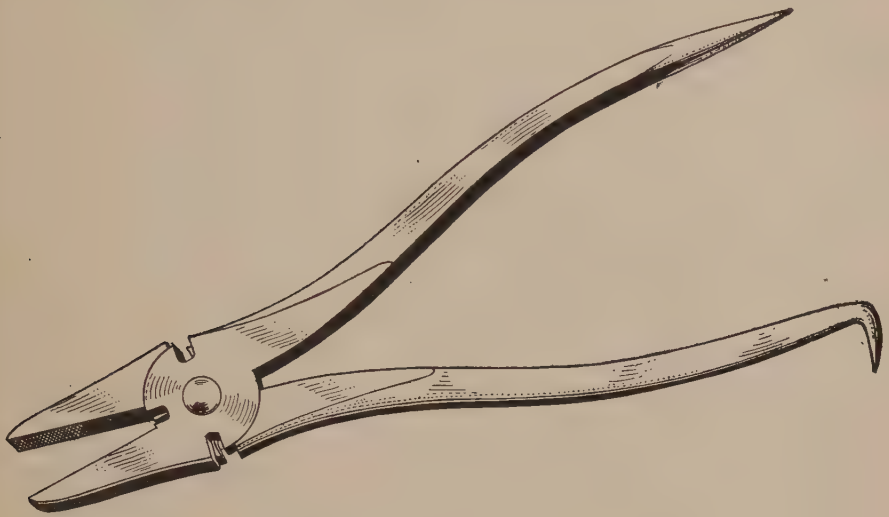
The accompanying drawing shows a pair of pinchers for stretching bolting cloth for reels. Have these made at a blacksmith shop from tool steel. The jaw, *A*, is straight, and should be about two



inches long, while the other jaw should be curved the same as in ordinary pinchers. This jaw, having about four teeth and coming up tight against jaw *A*, holds the cloth from slipping. The ends of handles serve as a tack-puller and screw driver.

COMBINATION TOOL FOR MILLERS

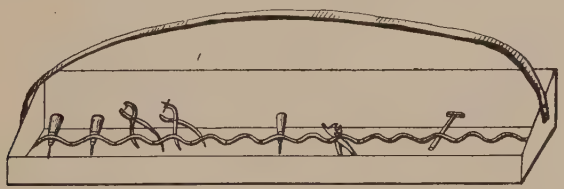
The illustration shows a pair of ordinary pliers so worked over as to meet the needs of the miller. One end is made into a belt hook for



pulling lacing, the other end being used as a scratch awl and for enlarging lace holes in belting. The nose is ground down for the purpose of pulling and stretching bolting silk while tacking. The engineer, teamster and all the other employes will find it very handy for odd jobs. A trial of one like it will soon convince anyone of its usefulness.

PORTABLE TOOL BOX

The sketch shows a section of a handy tool box in which are placed those tools that a miller uses most frequently. The advantage

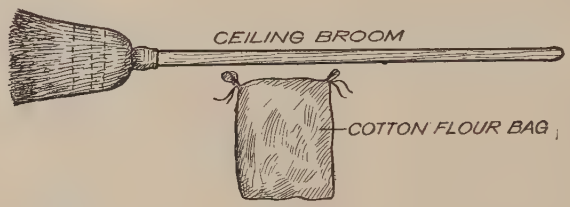


of this box is that a man always knows where the tools are and can carry them to any place where he may desire to use them. For instance, have a claw hammer, tack hammer, belt punches, spring punches, prick

punches, a bunch of cut lace leather, a couple of rounds of wire lacing, with the accompanying tools, combination pliers and wire cutter, screw driver and a couple of small wrenches. This makes a very handy outfit, but the miller can put in such tools as his requirements demand. A box from two and one-half to three feet long by eight inches wide at the top, is sufficiently large for the purpose.

BROOM WRINKLE

This is one of those little ideas which are so small in themselves, but which often prove such a satisfaction and help. When you are cleaning the ceilings of your mill just take an ordinary cotton flour bag. slip it over the broom and tie about the handle. It will be a big help,



will remove cobwebs and flour dust better from the ceilings and walls, and will prevent the broom from "shedding" straw around the place.

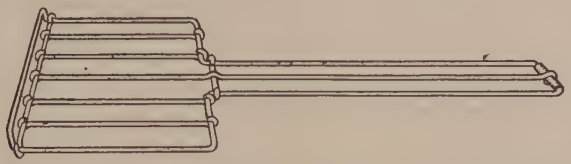
TWO GOOD SCRAPERS

A very valuable and inexpensive tool can be made as follows: Get two smooth mowing machine sickle blades and have the blacksmith

bore a hole through the center of each. Thread them, make two handles about ten inches long, and screw them into the blades and fasten tight with a jamb nut. One of them can be used for cleaning up all grease, oil and dust that accumulates on the floor or on machines. It is a very handy tool for that purpose, as it has several different angles. The other one should be kept sharp and used for finishing the surface of an endless splice on a leather belt.

WHEAT SCREEN CLEANER

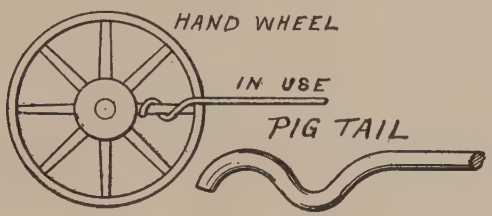
This little utensil is a wheat screen cleaner. It is made of wire about one-eighth of an inch in diameter and if necessary can be sold-



ered at the handle to make it rigid. The exact size depends on individual preference, but the proportions should be about as shown in the sketch.

TO START STUBBORN HAND WHEEL

Here is one of those little devices which is so simple as to seem hardly worth notice, but it is one of those things which help one out



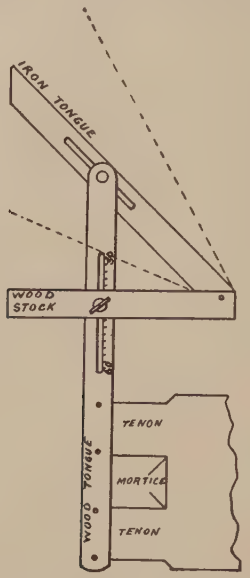
of many a little snarl. It is simply a lever for starting a hand wheel that sticks. It is made from an old G. T. Smith Purifier spring and can be used both ways on the wheel.

COMBINATION BEVEL AND PITCH-FINDER

The sketch shows a neat and handy combination tool. It may be made entire or can be attached to an ordinary bevel. It is useful to millers and draftsmen and is indispensable to millwrights. Any mechanic can make one and can see at a glance how it is made, as well as its advantages.

In marking off a spout, it shows at a glance what pitch the spout will have when up. The stock is neatly mortised to allow the wood tongue to slide either way and always remain square, and is fitted

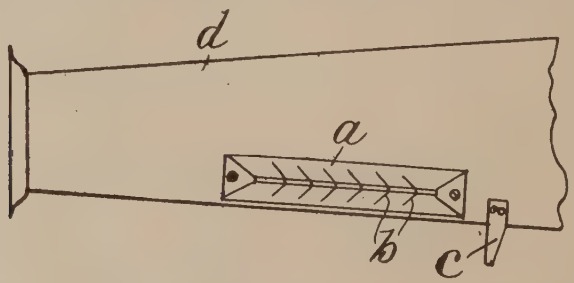
with a thumb-screw to firmly hold the wood tongue at any fixed point. The wood tongue is gauged to show exact pitch of iron tongue when set at any desired angle. In the wood tongue are four points for



gauging the mortise timber, as shown in the drawing. These are small screws and can be at any space desired. The stock acts as a fence while gauging.

SACK TWINE CUTTER

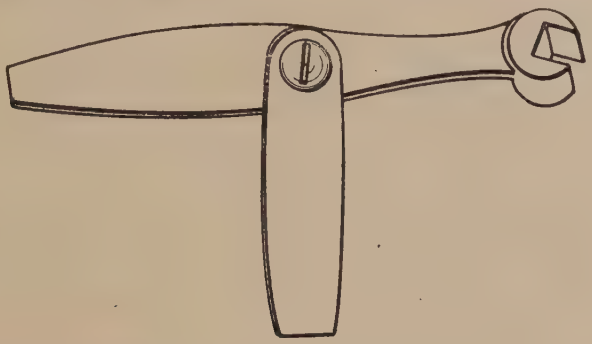
The accompanying sketch shows a sack twine cutter. In the sketch *d* is a spout; *a*, twine rack with more or less saw cuts, *b*, and



twine cutter, *c*. A sharp-toothed section of a mower blade makes a good twine cutter.

SCREW DRIVER

The drawing submitted herewith shows a handy pocket screw driver and wrench. It is 4 inches long, by one-half inch thick. The main bit tapers out to a small point and is used on screws from No. 10 down to very small ones. It is particularly handy on screws such as are used in the hinges of feeder doors. The auxiliary bit is large at the point and is very handy in setting slotted set screws in set collars,



where more force is required than can be attained with an ordinary driver. In small spaces, where an ordinary driver is too long, it is just the article needed, and saves many trips to the bench. The wrench end is used on the small set screws found on the feeders, and is much handier than a large, clumsy wrench. It may be used in opening feeder latches and doors, which have become doughed fast, and saves a hunt for a scraper when a ring forms on a pair of rolls.

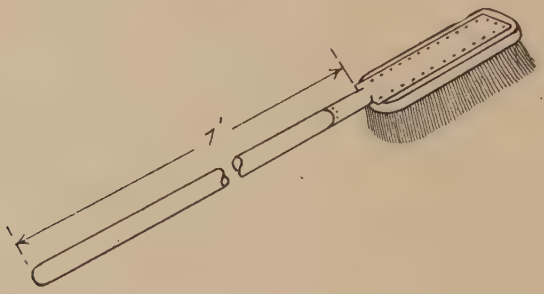
USEFUL WRENCH

Everybody, millers included, needs a wrench more or less. The drawing shows a wrench that is said to be one of the handiest ever

used. It is made of ¼x½-inch steel and is six inches long. The ends may be made any desired size. In the one shown they were for 3-16-inch and ¼-inch taps.

MILL BRUSH

The device illustrated is a brush for sweeping overhead parts of the mill. It is made from one-half of a floor brush, fastened to a



handle by nailing tin over the top of the brush and allowing the tin to extend far enough to bend around and nail to handle. The handle should be about 9 feet long.

EXTENSION BROOM

Many mills, particularly those with high ceilings, get pretty well festooned with cobwebs and dust, which surely do not add to the appearance of any plant. Take a piece of ¾-inch gas pipe twelve inches long and fasten one end solidly about half-way on an old broom

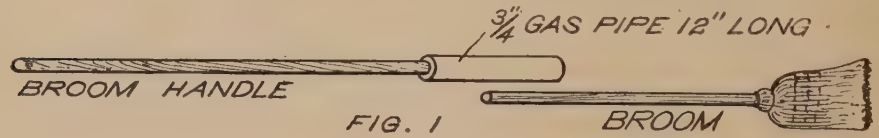
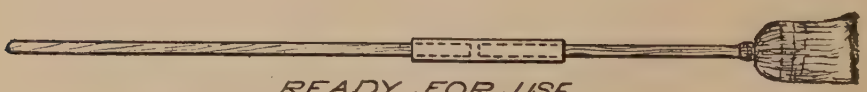


FIG. 1



READY FOR USE

FIG. 2

handle. Then take any old broom and slip it in the other end of the pipe and it will reach to the ceiling of almost any mill. When the broom is worn out simply substitute another broom and go after the cobwebs again.

"GRAB-HOOKS" FOR DOUGH BALLS

Here is a pair of "grab-hooks" that will take dough balls out from the rolls. Take a piece of hoop iron, about twelve inches long and one inch wide, sharpen and shape the ends so that *A* and *B* will come

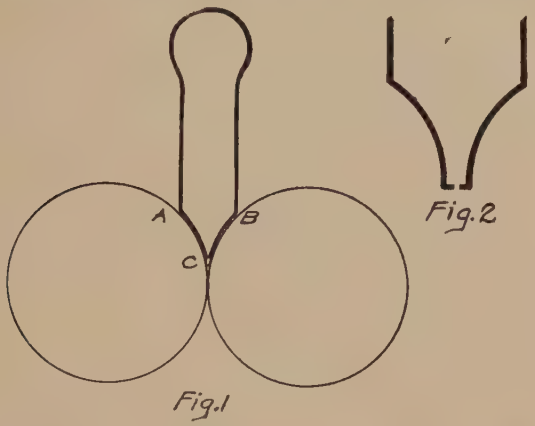


Fig. 1

Fig. 2

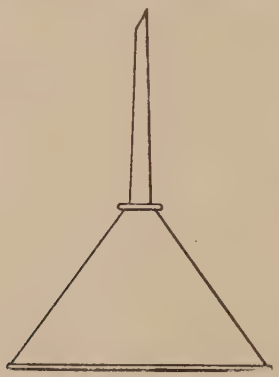
against the rolls before *C* reaches the point where it will be caught, as shown in Figure 1. This done bend the ends as shown in Figure 2 with the points turned in so that they can catch and lift out the dough balls.

CHAPTER XVIII

MISCELLANEOUS

OIL CAN WRINKLE

Here is a little trick that many may find new and useful. File the end of the oil can spout off slanting as shown in sketch so that you



can slip it under the lids of the journals without touching them with the hands. The advantage is obvious.

FEED SAVER

In nearly every mill and elevator some of the cleaners exhaust out of doors, and while the cleaners are built to separate the heaviest

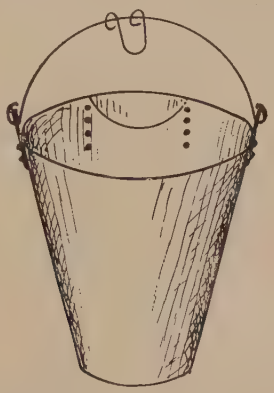
particles of cleanings from the wind, some of it is blown away. This is a loss which can to a certain extent be avoided.

To do this procure one inch boards one foot wide and saw two or more to a length equal to the width of the wind 'spout. Saw an opening in the bottom of the wind spout about six inches wide and clear across the spout. Nail one of the boards in the opening, extending it one inch up into the spout, the balance of it extending down from

the spout at a right angle. Nail another piece of the board, already prepared, to the spout at the other side of the opening and allow it to come within one-half inch of the first board. Then box up the ends of the boards which you nailed to the spout and you have a settling chamber similar to the ones built in cleaners. The board which you nailed at a right angle to the spout and allowed to extend in the spout about an inch should be toward the outer end of the spout. The heavier part of the cleanings will be nearest the bottom of the spout, and the projection will catch them and they will drop into the improvised settling chamber. If one of these will not catch all of the chaff and cleanings suitable for feed, several can be placed on the spout. The first one will catch the best part of the cleanings and the others will catch that which is left. The drawing is intended to show a side view of the spout with the feed catchers in place.

USEFUL MILL PAIL

The accompanying sketch might be taken for a fire pail, but it is used for an entirely different purpose. Get into the habit of removing all soft, sticky material that constantly accumulates on the sides of the frames where it has a chance to lodge, and from the brushes of the



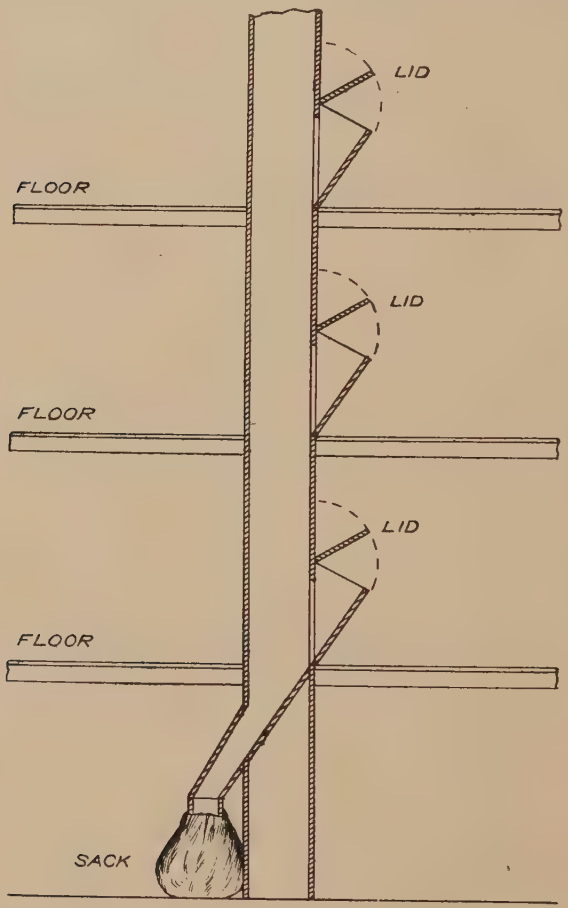
roller mills. Besides the pail, have a piece of galvanized sheet metal, 1½x3 inches, with which to scrape off the oily material which accumulates directly beneath where the roll journal passes through the frames. This is not placed with the good stock, but is placed in a separate re-

ceptacle and later burned in the furnace, while the good material is thrown into the feed.

The pail is hooked onto the frame at the door opening while the material is being removed and the job is thus very easily and neatly done. Clean out every day because it will prove profitable.

DISPOSING OF SWEEPINGS

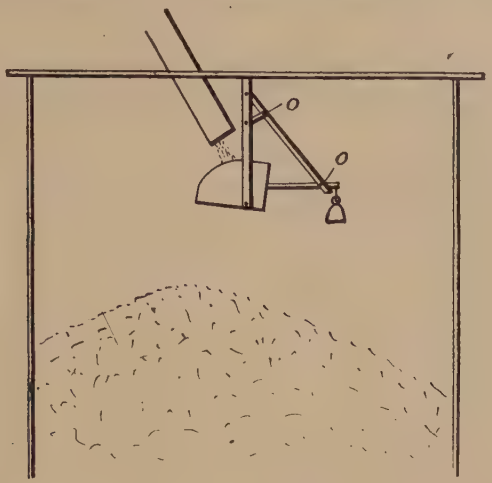
A useful wrinkle is the use of an old elevator to send sweepings to the feed bin or to a sack. There should be no elevator buckets or



belt in it. The accompanying drawing is self-explanatory. Where there is an elevator running it can be spouted.

AUTOMATIC MEAL MIXER

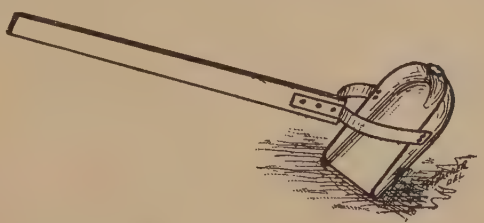
If you are troubled by the fact that your unbolted meal, when spouted into the bin in a steady stream, separates and requires mixing to keep it even quality and weight, correct this difficulty by the



"wrinkle" here sketched. The contrivance is easily made, and costs but a trifle. The weight arm has a sweep of the distance between points marked *O*. Make scoop about 6 inches wide and 9 inches long by 6 inches deep. Hang so that stream strikes at center of top of scoop. Place bar across frame at points *O* to support and retard weight arm. Adjust weight so as to properly return scoop when empty and hold same in position until full.

HOE FOR MEAL

A handy tool for millers' use can be made by taking a piece of

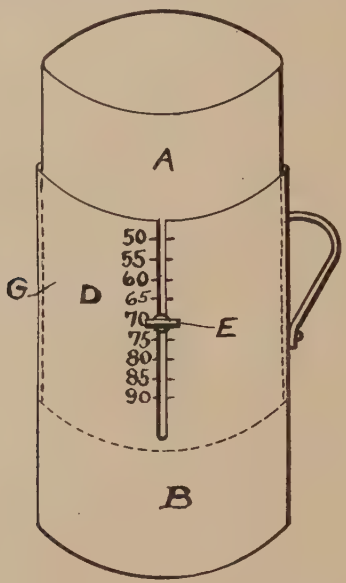


poplar 4 to 6 feet long, 7/8x2¾ inches at one end and tapering to 2 inches at other end. This can be fastened to an old scoop from which

the handle has been broken out, with two old roll scraper irons, as shown in the sketch. This makes a very convenient device for stirring back meal, wheat, etc., in open bins.

SMALL MEASURE FOR GRAIN

Nearly all millers in towns or villages have customers who buy from 10 to 50 cents' worth of wheat and other grain for feed. By having a measure like the one shown, a great deal of time can be saved as compared with weighing it out on scales. A measure like this costs but very little and any tinsmith can make it. *G* is the measure; *A* is a round cylinder open at both ends; *B* is another cylinder open at the top, and with a bottom to it. *A* fits into *B*, like a telescope. *E*



is a screw fastener to hold the measure at the desired place when opening or closing. *D* is a scale of figures by which the measure can be set as the price of grain varies.

SIEVE FOR CHOKES

The drawing represents a "wrinkle" that consists of a common two-bushel sack and a round hand-sieve made to fit therein, which

will enable the sifter who sieves a sieve full of chokes to do so without dust and the unpleasantness of standing in a pile of flour while the work is going on. It also saves scooping the flour up the second time.

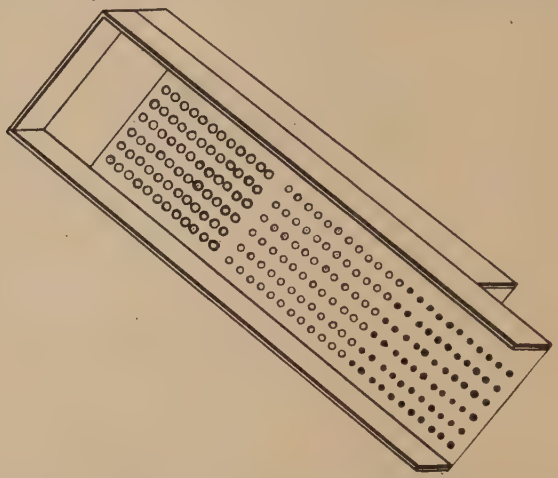
When the work is finished the siftings will be in the sack and the trash in a pile by itself.

SCALPER FOR CORN MEAL

The drawing represents a kind of a double spout about 7 feet long and 9 inches wide. The bottom of the upper section is made of perforated zinc such as is used for wheat screens. At the top a piece of tin 8 to 10 inches long is placed in order to start the stock down the incline before any can drop through. One-third of the way down the perforations are 7-32 of an inch in diameter, on the next third they are 5-32 of an inch in diameter, while on the lower third they are 4-32 of an inch in diameter.

The bottom of the lower section is made of sheet iron. This lower section collects all that drops through the perforated section and carries

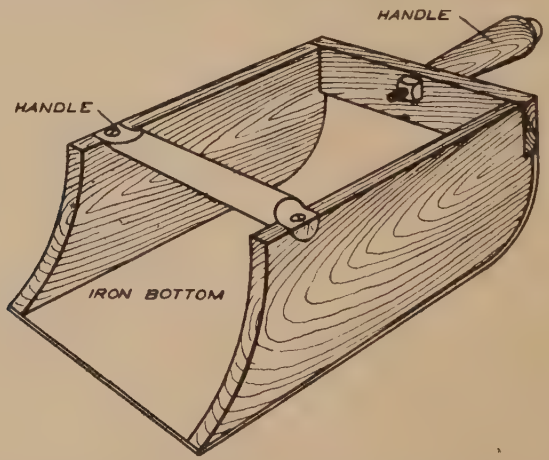
it to lower end, whence it may be spouted as desired. This little separator is suspended by cords at top and bottom, and the bottom is so



arranged that it may be raised or lowered to either accelerate or retard the flow of the stock, as desired.

SCOOP FOR MILL USE

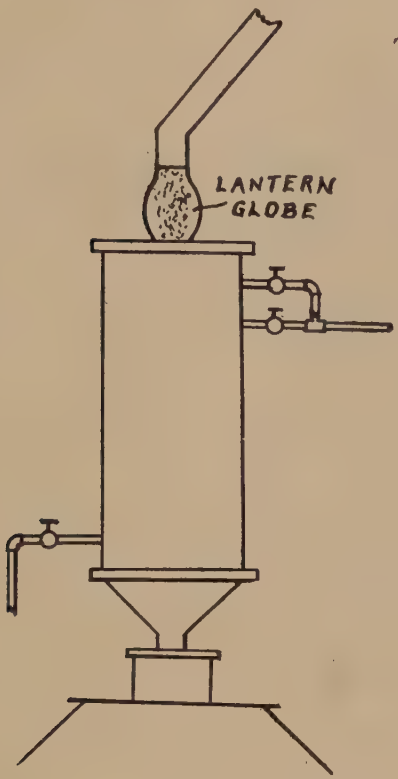
Secure two boards 8 or 10 inches wide, cut in the shape shown, for sides; a round piece across top for a handle, and a 2-inch piece



for the end of scoop, in which the end handle can be fastened. The bottom can then be covered with common sheet iron or galvanized iron. The latter will give much better service.

GLOBE FOR FIRST BREAK

An inexpensive and very useful appliance is shown in the sketch. It is an ordinary lantern globe placed on top of first break roll or wheat

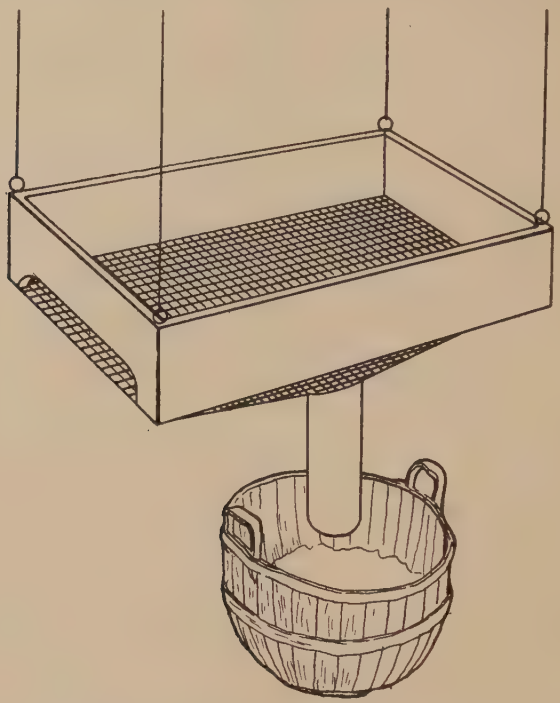


steamer. The wheat from the garner passes through this globe. The miller, by glancing at the wheat passing through the lantern globe, can tell whether or not the first break feeder is working properly. He can also tell if the garner has run empty.

HOME-MADE SIEVE

A very useful and convenient article is shown herewith—a home-made sieve, 20x40 inches and 8 inches deep. This sieve has a canted bottom pitching toward the center, with a sleeve attached. It can be

made with an interchangeable sieve and can, therefore, be used to sift anything that comes along. It is suspended by four ½-inch ropes, and



when not in use it can be hooked up to a nail or to a hook put up especially for that purpose, and it need not be loosened from the ropes.

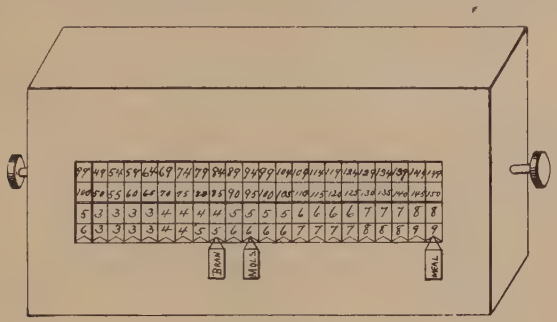
PRICE INDICATOR AND COMPUTER

The illustrations show a computing device which is very simple in construction, is durable, saves time and avoids mistakes. The finger indicators can be set to indicate the price per 100 pounds, and by turning the cylinder by means of the thumb nuts, the price for any number of pounds from 5 to 100 is readily indicated.

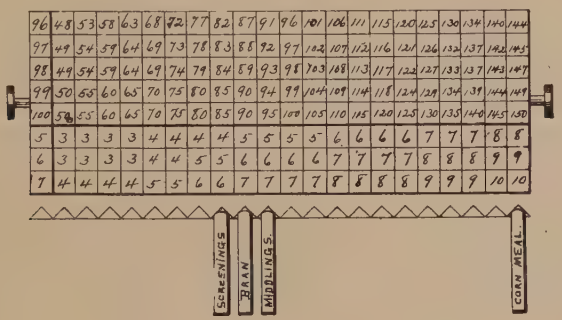
Figure 2 is a diagram of the cylinder, but it only shows a few of the 96 lateral rows of figures which encircle the cylinder. The figures from 5 to 100 extending around the left end of the cylinder represent pounds; all the other figures are cents.

In Fig. 1 the paddles are set to show the price of bran as 85 cents

per hundred; middlings, 95 cents; meal, $1.50. The possible range of price per 100 pounds is 50 cents to $1.50. If the bran paddle is set at 90 cents per 100 pounds and a customer's purchase weighs 96 pounds, turn the cylinder around until 96 in the pound column reaches the indicating line. Then the figures above the bran paddle show that 87



cents is the price. If a customer asks for $1.45 worth of meal, turn the cylinder until 145 cents stands above the meal paddle, then by looking in the pound column you find that you must give the man 97

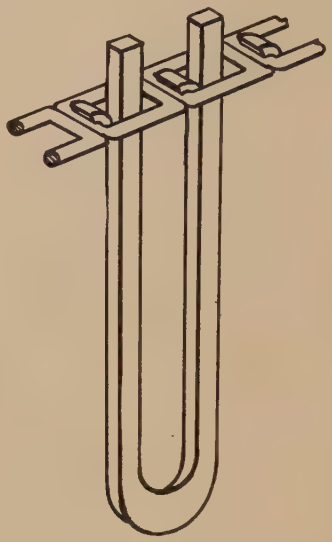


pounds of meal. In other words, the figures on the cylinder will give you the price for a given number of pounds of stock, or the number of pounds for a given price.

TAKING UP SLACK IN SPROCKET CHAINS

The illustration shows a device for taking up the slack in sprocket chains. To make this, take a piece of square steel about 2 feet long

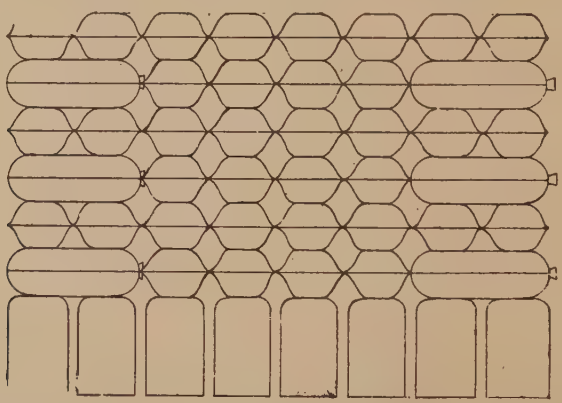
and have a blacksmith bend it in the shape of a magnet. When a sprocket chain becomes loose and it is desired to tighten it, place the



steel in a vise, place the loose links on the ends and screw up the vise until all the play is taken up.

ADVANTAGES OF SYSTEMATIC PILING

Most millers pile their flour in one solid mass, thereby making a grand place for mice to nest and preventing a circulation of air through



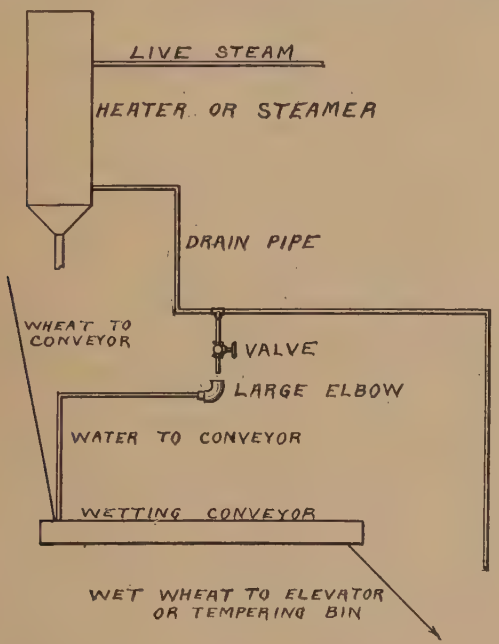
the sacked flour, which is very necessary to insure its good condition. A few millers pile their flour in tiers, but pile too closely and soil a

large number of sacks by starting wrong in laying the first sacks flat on the floor.

Pile your flour as shown in the sketches given herewith. The amount of room lost in this way of piling is more than made up by the saving in flour and sacks, and the good condition of the flour. Tiers should be six inches apart and sacks piled directly one on top of the other and not against each other, but only just touching, so that the weight will be straight to the floor. Flour may be piled ten to twelve sacks high with perfect safety as to toppling over, and when once accustomed to this way of piling the packer can turn out one sack per minute with ease or as much as he can with careless piling.

WETTING WHEAT WITHOUT RESERVOIR

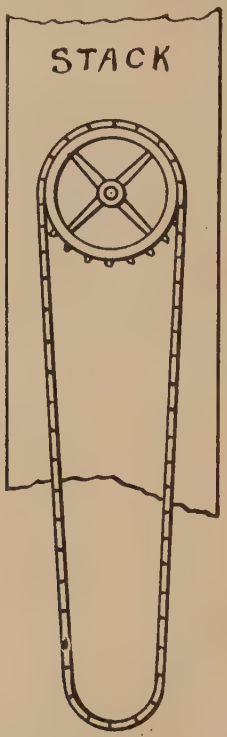
The arrangement for wetting wheat shown herewith entirely does



away with the reservoir or tank. It hardly needs explanation. A T-connection is inserted in the drain pipe from the heater or steamer, with a valve below it for regulating the flow. The large elbow below the valve catches the water and passes it on to the wetting conveyor.

DAMPER REGULATOR

Take an old sprocket wheel, which nearly all mills have, saw off the cross-arm of the damper on the smokestack and slip the wheel on,



tighten it on with the set-screw and then put on the chain. This gives complete control of the valve.